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THE INDUSTRIAL COMMISSION OF OHIO

DEPARTMENT OF
INVESTIGATION AND STATISTICS

REPORT No. 1

Wages and Hours of Labor of Women and Girls Employed in Mercantile Establishments in Ohio in 1913

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This Report on Wages and Hours of Labor of Women and Girls Employed in Ohio Mercantile Establishments has been prepared in response to An Act (Ohio Laws, 1913, page 654) "requiring certain information to be reported to The Industrial Commission of Ohio by certain employers of female labor", passed by the General Assembly of the State of Ohio on April 11, 1913, and approved by the Governor on May 5, 1913.

The blank forms for reporting the information required by the act were sent out by The Industrial Commission of Ohio early in September, 1913. The tabulation of the returns was done by the clerical force in the Department of Investigation and Statistics under the direction of Fred C. Croxton, Chief Statistician. The text of the report was written by the undersigned.

M. B. HAMMOND,
Commissioner in charge of Investigation and Statistics.

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WAGES AND HOURS OF LABOR OF WOMEN AND GIRLS EMPLOYED IN MERCANTILE ESTABLISHMENTS IN OHIO.

For several years past there has been in various portions of the United States a considerable agitation for a legal minimum wage, especially for women workers. Nine American commonwealths enacted minimum wage laws during the years 1911-1913 applicable only to women and minors. In one state (Utah) the minima wages to be paid are fixed by statute. In a few states the wages are to be fixed after investigation by order of a state board or commission. In most cases, however, the practice which has been followed for some years by several Australian states, and which has recently been adopted in Great Britain, of having the minimum wage for each industry determined at a conference of representative employers and employes in that industry has been accepted. This conference is usually known as a wages board. It considers carefully all the elements entering into the situation and in its recommendations covers the entire wage schedule including both time wages and piece rates. Unless there are valid reasons for rejecting the recommendations of a wages board, the commission, or whatever branch of the government that has charge of the matter, issues an order covering the recommendations of the wages board and thereafter it becomes unlawful for any employer in that industry to pay lower rates of wages than those specified in the order.

The people of Ohio in November, 1912, adopted the following amendment to the State constitution:

"Article II, Sec. 34. Laws may be passed fixing and regulating the hours of labor, establishing a minimum wage, and providing for the comfort, health, safety and general welfare of all employes; and no other provision of the constitution shall impair or limit this power."

Taking advantage of the opportunity afforded by this amendment to the Constitution, several members of the Eightieth General Assembly, at its regular session in 1913, introduced bills which were intended to provide in one form or another for a legal minimum wage. While these bills were pending, widespread publicity was given by the newspapers to the investigations being conducted by a committee of the legislature of the State of Illinois into the wages paid to women and girls employed by Chicago department stores.

Members of the Ohio legislature felt that it was desirable to know what was the situation with respect to the wages paid to female employes in Ohio mercantile establishments and believed that such information should be gathered prior to the consideration of any minimum wage law in this state.

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The General Assembly therefore enacted a law which was signed by the Governor on May 5, 1913, and which required that:

"Every person, partnership or corporation engaged in the operation of any mercantile establishment within the state of Ohio and employing five or more female employes in or about said establishment shall make a report in writing to The Industrial Commission of Ohio within thirty days after the taking effect of this act, which report shall contain the following information with reference to female employes on the date of the taking effect of this act, viz.:

(1) The total number of female employes employed in or about said mercantile establishment.
(2) The number of such female employes under the age of eighteen years.
(3) The name of each female employed in or about such mercantile establishment.
(4) The age of each female employed in or about such mercantile establishment.
(5) The number of hours per day each female is employed in or about such mercantile establishment.
(6) The number of hours per week each female is employed in or about such mercantile establishment.
(7) The wages per week paid to each female employed in or about such mercantile establishment.
(8) The class or kind of employment in or at which each female is employed in or about such mercantile establishment.
(9) Such other information relative to the hours of employment and wages paid to such female employes as may be required by The Industrial Commission of Ohio."

Under authority of this act, The Industrial Commission of Ohio prepared a schedule form which was mailed to mercantile establishments throughout the state. Employers were asked to submit information as to hours and wages for the week ending August 16th, this week falling within the "thirty days after the taking effect of this act" according to the referendum provisions of the constitution. A few employers reported their wages for some other week—usually the week immediately preceding the receipt of the blank schedule—and unless there was some reason to believe that these returns varied considerably from those which would have been returned for the week ending August 16th, they were accepted.

In a few instances returns were received from employers having in their employ fewer than five female employes. These employers were not required by law to make returns. However, the figures furnished by them have been included in the tables contained in this report.

Replies in answer to the first request made by the commission were received from 1,086 establishments employing in the aggregate 15,744 women and girls. Not all the firms to whom schedule blanks were sent made reply. Inasmuch as the Commission possessed no list of all the mercantile establishments in the state, and it furthermore had no means of knowing which of the establishments on its list had five or more female employes, it is impossible to say how many of the firms required by law

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to make returns actually sent in the information solicited. It is certain that many of the firms to whom the blank schedules were sent did not have on their pay-rolls as many as five female employes and therefore did not feel compelled to fill out and return the forms.

Under ordinary circumstances, it would be the practice of The Industrial Commission to send a second request and to follow this up by agents in order to secure complete returns, but at the time these schedules were being received the Division of Investigation and Statistics was in process of organization and the field agents had not yet been appointed. Furthermore, in their annual reports which all employers of five or more employes are required by law to make to The Industrial Commission there will be furnished data concerning the wages of their employes similar to that presented in the following tables. The number of establishments required to report will be so much greater than those covered by the present inquiry that it seemed better to await the returns of the annual reports than to push further the present investigation.

The number of employers covered by the present investigation compares very favorably with those covered by investigations in other states. The Report of the Massachusetts Commission on Minimum Wage Boards issued in 1912 which led to the enactment of the minimum wage act in that state furnishes information concerning 15,278 female wage earners employed in four different occupations in that state. Only 3,328 of these wage earners are reported as being employed in mercantile establishments. Our own report furnishes information concerning the wages of 15,744 women and girls employed in mercantile establishments.

The distribution of these workers in the various towns and cities of the State is shown in Table I.

TABLE I—NUMBER OF MERCANTILE ESTABLISHMENTS REPORTING IN EACH CITY AND NUMBER OF FEMALE EMPLOYES REPORTED BY AGE GROUPS OF EMPLOYES.

	Number of Establishments Reporting.	Number of Female Employes Reported.		
		18 Years of Age and Over.	Under 18 Years of Age.	Total.
Cincinnati	88	2,535	414	2,949
Cleveland	118	2,255	301	2,556
Columbus	72	1,683	48	1,731
Dayton	33	879	39	918
Toledo	49	1,356	78	1,434
Cities of 25,000 and under 100,000 population	135	2,307	102	2,409
Cities of 10,000 and under 25,000 population	170	1,615	60	1,675
Towns of less than 10,000 population	421	2,005	67	2,072
Total	1,086	14,635	1,109	15,744

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A general summary of the wage data furnished by the 1,086 establishments reporting shows that of the female employes 18 years of age or over, five out of eight received $8 per week or less and one out of three received $6 per week or less. Of the female employes under 18 years of age, five out of eight received $4 per week or less and one out of three received $3 per week or less.

One of the interesting features of the wage situation, brought out by the tabulation of the wages reported, is the remarkable concentration on certain rates of pay measured in even dollars in the case of adult workers and in half dollars in the case of employes under 18 years of age.

Eight rates include 10,218, or practically seventy percent, of the 14,635 females 18 years of age and over. Those rates arranged in order, beginning with the rate at which the greatest number was employed, were as follows:

1,969, or 13.5 percent of the total, received $6 per week.
1,711, or 11.7 percent of the total, received $7 per week.
1,504, or 10.3 percent of the total, received $8 per week.
1,339, or 9.1 percent of the total, received $5 per week.
1,288, or 8.8 percent of the total, received $10 per week.
1,096, or 7.5 percent of the total, received $9 per week.
789, or 5.4 percent of the total, received $12 per week.
522, or 3.6 percent of the total, received $4 per week.

Seven rates include 903, or over eighty-one percent, of the 1,109 females under 18 years of age, as follows:

201, or 18.1 percent of the total, received $4.00 per week.
148, or 13.3 percent of the total, received $3.00 per week.
147, or 13.3 percent of the total, received $3.50 per week.
145, or 13.1 percent of the total, received $5.00 per week.
107, or 9.6 percent of the total, received $4.50 per week.
78, or 7.0 percent of the total, received $2.50 per week.
77, or 6.9 percent of the total received $6.00 per week.

The more detailed summary which follows shows the number and percent of female employes reported receiving each weekly wage.

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TABLE 2—WAGES PER WEEK OF FEMALE EMPLOYES IN MERCANTILE ESTABLISHMENTS REPORTING, BY AGE GROUPS.

Wages Per Week.	18 Years of Age and Over.		Under 18 Years of Age.		Total (All Ages.)	
	Number Receiving Each Rate.	Per Cent. Receiving Each Rate.	Number Receiving Each Rate.	Per Cent. Receiving Each Rate.	Number Receiving Each Rate.	Per Cent. Receiving Each Rate.
Under $2.00	75	0.5	77	6.9	152	1.0
$2.00	30	.2	39	3.5	69	.4
Over $2.00 and under $2.50	8	.1	2	.2	10	.1
$2.50	31	.2	78	7.0	109	.7
Over $2.50 and under $3.00	6	(a)	13	1.2	19	.1
$3.00	178	1.2	148	13.3	326	2.1
Over $3.00 and under $3.50	23	.2	3	.3	26	.2
$3.50	132	.9	147	13.3	279	1.8
Over $3.50 and under $4.00	34	.2	2	.2	36	.2
$4.00	522	3.6	201	18.1	723	4.6
Over $4.00 and under $4.50	43	.3	2	.2	45	.3
$4.50	380	2.6	107	9.6	487	3.1
Over $4.50 and under $5.00	43	.3	.....	.....	43	.3
$5.00	1,339	9.1	145	13.1	1,484	9.4
Over $5.00 and under $6.00	289	2.0	20	1.8	309	2.0
$6.00	1,969	13.5	77	6.9	2,046	13.0
Over $6.00 and under $7.00	278	1.9	10	.9	288	1.8
$7.00	1,711	11.7	19	1.7	1,730	11.0
Over $7.00 and under $8.00	498	3.4	2	.2	500	3.2
$8.00	1,504	10.3	10	.9	1,514	9.6
Over $8.00 and under $9.00	242	1.7	3	.3	245	1.6
$9.00	1,096	7.5	.....	.....	1,096	7.0
Over $9.00 and under $10.00	80	.5	.....	.....	80	.5
$10.00	1,288	8.8	4	.4	1,292	8.2
Over $10.00 and under $11.00	35	.2	.....	.....	35	.2
$11.00	301	2.1	.....	.....	301	1.9
Over $11.00 and under $12.00	20	.1	.....	.....	20	.1
$12.00	789	5.4	.....	.....	789	5.0
Over $12.00 and under $15.00	415	2.8	.....	.....	415	2.6
$15.00	488	3.3	.....	.....	488	3.1
Over $15.00 and under $20.00	370	2.5	.....	.....	370	2.4
$20.00	152	1.0	.....	.....	152	1.0
Over $20.00	266	1.8	.....	.....	266	1.7
Total	14,635	100.0	1,109	100.0	15,744	100.0

(a) Less than one-tenth of one per cent.

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Owing to the peculiar distribution of employes throughout the various wage groups, it is not possible to indicate precisely what is the *prevailing rate* of wages for female employes in mercantile establishments throughout the state or even for any city or group of cities. If, however, we examine carefully the numbers and percentages given in Table 2, we shall see that of the 14,635 employes 18 years of age or over, 40.7 per cent received weekly wages ranging from six dollars to eight dollars, inclusive. Of the 1,109 employes under 18 years of age, 755, or 68.1 per cent, received wages ranging from three dollars to five dollars, inclusive. *The prevailing rates of wages for women in Ohio mercantile establishments may therefore be said to be from six to eight dollars per week, while for girls under eighteen years of age the prevailing rates are from three to five dollars per week.*

The reader's attention should be called to the fact that these are not average wages. They are, however, the typical wages, as may easily be shown by the following statement:

Of the 14,635 employes 18 years of age or over for whom returns were received,

3,133 received less than six dollars per week.
5,960 received from six to eight dollars per week.
5,542 received more than eight dollars per week.

Of the 1,109 girls under 18 years of age whose wages are given in the table,

209 received less than three dollars per week.
755 received from three to five dollars per week.
145 received more than five dollars per week.

The Industrial Commission has collected no information which would tend to show what is the necessary cost of living for female employes of Ohio mercantile establishments. Any one who has formed an opinion on this matter can, however, readily ascertain from the above table the number of female employes in these 1,086 establishments who are receiving less than what he considers to be a living wage.

Attention should also be called to the fact that the figures which have been collected and compiled relate to weekly wages and not to earnings. Many employers pay in addition to the regular weekly wages a premium or bonus to their employes proportioned in some way to their sales. In some cases the premiums are paid only to heads of departments, while in other cases premiums are paid to saleswomen. They may vary according to the character of goods sold, or they may be paid only on the portion of the sales which exceeds a certain stated amount. A statistical statement could not well take account of all these variations.

Although neither earnings nor time rates are, taken separately, entirely satisfactory, it is probable that the wage statistics furnish a better clue to the situation of the employe than would statistics of earnings

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collected by means of such an investigation as that which the Commission was authorized to conduct.

The next summary presents a comparison of the predominant rates paid females 18 years of age and over in the several cities or groups.

TABLE 3—PREDOMINANT RATES OF WAGES OF FEMALE EMPLOYES 18 YEARS OF AGE OR OVER IN MERCANTILE ESTABLISHMENTS, BY CITIES.

City.	Rate at which *highest number* was employed and per cent. of total employed at that rate.		Rate at which *second highest number* was employed and per cent. of total employed at that rate.		Rate at which *third highest number* was employed and per cent. of total employed at that rate.		Rate at which *fourth highest number* was employed and per cent. of total employed at that rate.	
	Rate.	Per cent.	Rate.	Per cent.	Rate.	Per cent.	Rate.	Per cent.
Cincinnati	$6 00	12.6	$8 00	11.9	$7 00	10.2	$10 00	8.7
Cleveland	7 00	11.8	8 00	11.7	10 00	11.4	6 00	8.4
Columbus	6 00	11.7	8 00	10.2	7 00	9.7	10 00	9.2
Dayton	7 00	20.5	6 00	14.4	8 00	14.0	5 00	9.0
Toledo	7 00	14.8	6 00	13.3	8 00	10.4	5 00	8.4
Cities of 25,000 and under 100,000 population	6 00	15.1	5 00	11.7	7 00	10.7	8 00	8.6
Cities of 10,000 and under 25,000 population	6 00	16.2	5 00	12 4	7 00	11.6	8 00	8.3
Towns of under 10,000 population	6 00	17.2	5 00	11.7	7 00	10.3	8 00	8.6

The facts shown by Table 3 tend to emphasize for each of the various cities or groups of cities or towns what has already been revealed in studying the tables which cover the entire state. Either the six dollar rate or the seven dollar one is shown to be the predominant rate of pay in every one of the cities and groups of cities and towns of the state. Taken together the six dollar and the seven dollar rates include from one-fifth to one-third of all the women workers in mercantile establishments in every one of the large cities and in every group of cities and towns given in the table. If we include also the eight dollar rate, we find the percentage of women workers receiving one or the other of these three rates to vary from 31.6 in Columbus to 48.9 in Dayton.

The variations in the wages paid in the different towns and cities are less than one might naturally suppose. The presence of the ten dollar rate as one of the four leading rates paid in Cincinnati, Cleveland and Columbus, and its absence in the four leading rates in the other cities and groups does indicate that the size of the city and the higher cost of living in the large cities have exerted some influence on wages. Likewise the absence of the five dollar rate as one of the four leading rates in the three largest cities of the state and its presence as one of the leading rates in all other cities and towns shows that the smaller cities and towns have lower wage scales than the large cities. It is doubtful,

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however, whether any close connection can be shown to exist between the variations in the cost of living in the various cities and towns and the variations in wages in these places.

The final wage tables of this report show for each city or group the number and percent of female employes, in mercantile establishments reporting, receiving each classified amount per week. Table 4 shows numbers and Table 5 shows percentages.

TABLE 4—NUMBER OF FEMALE EMPLOYES, IN MERCANTILE ESTABLISHMENTS REPORTING, RECEIVING EACH CLASSIFIED AMOUNT PER WEEK, BY CITIES AND BY AGE GROUPS.

EIGHTEEN YEARS OF AGE AND OVER.

Wage Per Week.	Cincinnati.	Cleveland.	Columbus.	Dayton.	Toledo.	Cities 25,000 and under 100,000.	Cities 10,000 and under 25,000.	Towns under 10,000.
Under $2.00	1	1	3	.....	1	4	14	51
$2.00	1	5	7	1	1	3	7	5
Over $2.00 and under $2.50	1	2	3	.....	.....	.....	.....	2
$2.50	7	3	7	.....	.....	.....	3	11
Over $2.50 and under $3.00	2	.....	1	.....	2	.....	.....	1
$3.00	45	5	22	12	12	15	15	52
Over $3.00 and under $3.50	5	3	6	.....	9	.....	.....	.....
$3.50	14	2	13	12	14	30	18	29
Over $3.50 and under $4.00	8	9	.....	2	7	4	3	1
$4.00	78	23	46	6	35	159	60	115
Over $4.00 and under $4.50	6	2	.....	.....	16	2	1	16
$4.50	46	61	81	4	10	85	42	51
Over $4.50 and under $5.00	3	4	.....	.....	19	6	.....	11
$5.00	208	99	134	79	114	270	201	234
Over $5.00 and under $6.00	65	35	30	12	70	43	10	24
$6.00	320	190	197	127	180	349	261	345
Over $6.00 and under $7.00	68	28	36	12	42	43	20	34
$7.00	259	266	164	180	201	246	188	207
Over $7.00 and under $8.00	91	67	38	21	40	48	95	98
$8.00	301	263	171	123	141	199	134	172
Over $8.00 and under $9.00	41	48	24	8	34	29	40	18
$9.00	208	199	148	57	83	170	112	119
Over $9.00 and under $10.00	25	11	9	.....	14	2	14	5
$10.00	221	256	155	71	103	193	133	156
Over $10.00 and under $11.00	.....	4	8	.....	7	6	3	7
$11.00	78	68	44	11	11	42	23	24
Over $11.00 and under $12.00	.....	7	2	.....	2	3	3	3
$12.00	149	119	106	54	60	110	73	88
Over $12.00 and under $15.00	89	114	44	14	36	54	34	30
$15.00	82	120	61	28	35	72	38	52
Over $15.00 and under $20.00	55	88	65	21	25	59	28	29
$20.00	17	47	20	5	7	25	20	11
Over $20.00	46	76	38	19	25	36	22	4
Total	2,535	2,255	1,683	879	1,356	2,307	1,615	2,005

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TABLE 4 — Continued.

UNDER EIGHTEEN YEARS OF AGE.

Wage Per Week.	Cincinnati.	Cleveland.	Columbus.	Dayton.	Toledo.	Cities 25,000 and under 100,000.	Cities 10,000 and under 25,000.	Towns under 10,000.
Under $2.00	11	21	.....	.....	1	4	9	31
$2.00	24	6	1	.....	.....	6	1	1
Over $2.00 and under $2.50	.....	1	.....	.....	.....	1	.....	.....
$2.50	49	4	7	.....	1	9	4	4
Over $2.50 and under $3.00	12	.....	1	.....	.....	.....	.....	.....
$3.00	77	22	20	7	3	4	6	9
Over $3.00 and under $3.50	2	.....	1	.....	.....	.....	.....	.....
$3.50	77	33	3	5	17	7	5	.....
Over $3.50 and under $4.00	2	.....	.....	.....	.....	.....	.....	.....
$4.00	62	69	2	2	23	23	13	7
Over $4.00 and under $4.50	2	.....	.....	.....	.....	.....	.....	.....
$4.50	36	31	4	2	6	21	4	3
Over $4.50 and under $5.00	.....	.....	.....	.....	.....	.....	.....	.....
$5.00	31	48	5	10	18	14	11	8
Over $5.00 and under $6.00	8	8	.....	2	.....	2	.....	.....
$6.00	12	35	3	9	6	6	4	2
Over $6.00 and under $7.00	3	6	.....	1	.....	.....	.....	.....
$7.00	4	8	.....	1	1	2	1	2
Over $7.00 and under $8.00	.....	2	.....	.....	.....	.....	.....	.....
$8.00	1	4	1	.....	1	1	2	.....
Over $8.00 and under $9.00	1	.....	.....	.....	.....	2	.....	.....
Over $9.00 and under $10.00	.....	.....	.....	.....	.....	.....	.....	.....
$9.00	.....	.....	.....	.....	.....	.....	.....	.....
$10.00	.....	3	.....	.....	1	.....	.....	.....
Total	414	301	48	39	78	102	60	67

TOTAL (ALL AGES).

Under $2.00	12	22	3	.....	2	8	23	82
$2.00	25	11	8	1	1	9	8	6
Over $2.00 and under $2.50	1	3	3	.....	.....	1	.....	2
$2.50	56	7	14	.....	1	9	7	15
Over $2.50 and under $3.00	14	.....	2	.....	2	.....	.....	1
$3.00	122	27	42	19	15	19	21	61
Over $3.00 and under $3.50	7	3	7	.....	9	.....	.....	.....
$3.50	91	35	16	17	31	37	23	29
Over $3.50 and under $4.00	10	9	.....	2	7	4	3	1
$4.00	140	92	48	8	58	182	73	122
Over $4.00 and under $4.50	8	2	.....	.....	16	2	1	16
$4.50	82	92	85	6	16	106	46	54
Over $4.50 and under $5.00	3	4	.....	.....	19	6	.....	11
$5.00	239	147	139	89	132	284	212	242
Over $5.00 and under $6.00	73	43	30	14	70	45	10	24
$6.00	332	225	200	136	186	355	265	347
Over $6.00 and under $7.00	66	34	36	13	42	43	20	34
$7.00	263	274	164	181	202	248	189	209
Over $7.00 and under $8.00	91	69	38	21	40	48	95	98
$8.00	302	267	172	123	142	200	136	172
Over $8.00 and under $9.00	42	48	24	8	34	31	40	18
$9.00	208	199	148	57	83	170	112	119
Over $9.00 and under $10.00	25	11	9	.....	14	2	14	5
$10.00	221	259	155	71	104	193	133	156
Over $10.00 and under $11.00	.....	4	8	.....	7	6	3	7

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TABLE 4 — Concluded.

Wage Per Week.	Cincinnati.	Cleveland.	Columbus.	Dayton.	Toledo.	Cities 25,000 and under 100,000.	Cities 10,000 and under 25,000.	Towns under 10,000.
$11.00	78	68	44	11	11	42	23	24
Over $11.00 and under $12.00	.....	7	2	.....	2	3	3	3
$12.00	149	149	106	54	60	110	73	88
Over $12.00 and under $15.00	89	114	44	14	36	54	34	30
$15.00	82	120	61	28	35	72	38	52
Over $15.00 and under $20.00	55	88	65	21	25	59	28	29
$20.00	17	47	20	5	7	25	20	11
Over $20.00	46	76	38	19	25	36	22	4
Total	2,949	2,556	1,731	918	1,434	2,409	1,675	2,072

TABLE 5 — PER CENT OF FEMALE EMPLOYES, IN MERCANTILE ESTABLISHMENTS REPORTING, RECEIVING EACH CLASSIFIED AMOUNT PER WEEK, BY CITIES AND BY AGE GROUPS.

EIGHTEEN YEARS OF AGE AND OVER.

Wage Per Week.	Cincinnati.	Cleveland.	Columbus.	Dayton.	Toledo.	Cities 25,000 and under 100,000.	Cities 10,000 and under 25,000.	Towns under 10,000.
Under $2.00	.....	.....	0.2	.....	0.1	0.2	0.9	2.5
$2.00	.....	0.2	.4	0.1	.1	.1	.4	.2
Over $2.00 and under $2.50	.....	.1	.2	.....	.....	.....	.....	.1
$2.50	.3	.1	.4	.....	.....	.....	.2	.5
Over $2.50 and under $3.00	.1	.....	.1	.....	.1	.....	.....	.....
$3.00	1.8	.2	1.3	1.4	.9	.7	.9	2.6
Over $3.00 and under $3.50	.2	.1	.4	.....	.7	.....	.....	.....
$3.50	.6	.1	.8	1.4	1.0	1.3	1.1	1.4
Over $3.50 and under $4.00	.3	.4	.....	.2	.5	.2	.2	.....
$4.00	3.1	1.0	2.7	.7	2.6	6.9	3.7	5.7
Over $4.00 and under $4.50	.2	.1	.....	.....	1.2	.1	.1	.8
$4.50	1.8	2.7	4.8	.5	.7	3.7	2.6	2.5
Over $4.50 and under $5.00	.1	.2	.....	.....	1.4	.3	.....	.5
$5.00	8.2	4.4	8.0	9.0	8.4	11.7	12.4	11.7
Over $5.00 and under $6.00	2.6	1.6	1.8	1.4	5.2	1.9	.6	1.2
$6.00	12.6	8.4	11.7	14.4	13.3	15.1	16.2	17.2
Over $6.00 and under $7.00	2.5	1.2	2.1	1.4	3.1	1.9	1.2	1.7
$7.00	10.2	11.8	9.7	20.5	14.8	10.7	11.6	10.3
Over $7.00 and under $8.00	3.6	3.0	2.3	2.4	2.9	2.1	5.9	4.9
$8.00	11.9	11.7	10.2	11.0	10.4	8.6	8.3	8.6
Over $8.00 and under $9.00	1.6	2.1	1.4	.9	2.5	1.3	2.5	.9
$9.00	8.2	8.8	8.8	6.5	6.1	7.4	6.9	5.9
Over $9.00 and under $10.00	1.0	.5	.5	.....	1.0	.1	.9	.2
$10.00	8.7	11.4	9.2	8.1	7.6	8.4	8.2	7.8
Over $10.00 and under $11.00	.....	.2	.5	.....	.5	.3	.2	.3

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TABLE 5 — Continued

Wage Per Week.	Cincinnati.	Cleveland.	Columbus.	Dayton.	Toledo.	Cities 25,000 and under 100,000.	Cities 10,000 and under 25,000.	Towns under 10,000.
$11.00	3.1	8.0	2.6	1.3	.8	1.8	1.4	1.2
Over $11.00 and under $12.00	.....	.3	.1	.....	.1	.1	.2	.1
$12.00	5.9	6.6	6.3	6.1	4.4	4.8	4.5	4.4
Over $12.00 and under $15.00	3.5	5.1	2.6	1.6	2.7	2.3	2.1	1.5
$15.00	3.2	5.3	3.6	3.2	2.6	3.1	2.4	2.6
Over $15.00 and under $20.00	2.2	3.9	3.9	2.4	1.8	2.6	1.7	1.4
$20.00	.7	2.1	1.2	.6	.5	1.1	1.2	.5
Over $20.00	1.8	3.4	2.3	2.2	1.8	1.6	1.4	.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

UNDER EIGHTEEN YEARS OF AGE.

Under $2.00	2.7	7.0	.....	.....	1.3	3.9	15.0	46.3
$2.00	5.8	2.0	2.1	.....	.....	5.9	1.7	1.5
Over $2.00 and under $2.50	.....	.3	.....	.....	.....	1.0	.....	.....
$2.50	11.8	1.3	14.6	.....	1.3	8.8	6.7	6.0
Over $2.50 and under $3.00	2.9	.....	2.1	.....	.....	.....	.....	.....
$3.00	18.6	7.3	41.7	18.0	3.8	3.9	10.0	13.4
Over $3.00 and under $3.50	.5	.....	2.1	.....	.....	.....	.....	.....
$3.50	18.6	11.0	6.2	12.8	21.8	6.9	8.3	.....
Over $3.50 and under $4.00	.5	.....	.....	.....	.....	.....	.....	.....
$4.00	15.0	22.9	4.2	5.1	29.5	22.5	21.7	10.4
Over $4.00 and under $4.50	.5	.....	.....	.....	.....	.....	.....	.....
$4.50	8.7	10.3	8.3	5.1	7.7	20.6	6.7	4.5
Over $4.50 and under $5.00	.....	.....	.....	.....	.....	.....	.....	.....
$5.00	7.5	15.9	10.4	25.6	23.1	13.7	18.3	11.9
Over $5.00 and under $6.00	1.9	2.7	.....	5.1	.....	2.0	.....	.....
$6.00	2.9	11.6	6.2	23.1	7.7	5.9	6.7	3.0
Over $6.00 and under $7.00	.7	2.0	.....	2.6	.....	.....	.....	.....
$7.00	1.0	2.7	.....	2.6	1.3	2.0	1.7	3.0
Over $7.00 and under $8.00	.....	.7	.....	.....	.....	.....	.....	.....
$8.00	.2	1.3	2.1	.....	1.3	1.0	3.3	.....
Over $8.00 and under $9.00	.2	.....	.....	.....	.....	2.0	.....	.....
$9.00	.....	.....	.....	.....	.....	.....	.....	.....
Over $9.00 and under $10.00	.....	.....	.....	.....	.....	.....	.....	.....
$10.00	.....	1.0	.....	.....	1.3	.....	.....	.....
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TOTAL (ALL AGES.)

Under $2.00	0.4	0.9	0.2	.....	0.1	0.3	1.4	4.0
$2.00	.8	.4	.5	.1	.1	.4	.5	.3
Over $2.00 and under $2.50	.....	.1	.2	.....	.....	.....	.....	.1
$2.50	1.9	.3	.8	.....	.1	.4	.4	.7
Over $2.50 and under $3.00	.5	.....	.1	.....	.1	.....	.....	.....
$3.00	1.1	1.1	2.4	2.1	1.0	.8	1.3	2.9
Over $3.00 and under $3.50	.2	.1	.4	.....	.6	.....	.....	.....
$3.50	3.1	1.4	.9	1.9	2.2	1.5	1.4	1.4
Over $3.50 and under $4.00	.3	.4	.....	.2	.5	.2	.2	.....
$4.00	4.7	3.6	2.8	.9	4.0	7.6	4.4	5.9
Over $4.00 and under $4.50	.3	.1	.....	.....	1.1	.1	.1	.8
$4.50	2.8	3.6	1.9	.7	1.1	4.4	2.7	2.6
Over $4.50 and under $5.00	.1	.2	.....	.....	1.3	.2	.....	.5

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TABLE 5 — Concluded.

Wage Per Week.	Cincinnati.	Cleveland.	Columbus.	Dayton.	Toledo.	Cities 25,000 and under 100,000.	Cities 10,000 and under 25,000.	Towns under 10,000.
$5.00	8.1	5.8	8.0	9.7	9.2	11.8	12.7	11.7
Over $5.00 and under $6.00	2.5	1.7	1.7	1.5	4.9	1.9	.6	1.2
$6.00	11.3	8.8	11.6	14.8	13.0	14.7	15.8	16.7
Over $6.00 and under $7.00	2.2	1.3	2.1	1.4	2.9	1.8	1.2	1.6
$7.00	8.9	10.7	9.5	19.7	14.1	10.3	11.3	10.1
Over $7.00 and under $8.00	3.1	2.7	2.2	2.3	2.8	2.0	5.7	4.7
$8.00	10.2	10.4	9.9	13.4	9.9	8.2	8.1	8.3
Over $8.00 and under $9.00	1.4	1.9	1.4	.9	2.4	1.3	2.4	.9
$9.00	7.1	7.8	8.5	6.2	5.8	7.1	6.7	5.7
Over $9.00 and under $10.00	.8	.4	.5	.....	1.0	.1	.8	.2
$10.00	7.5	10.1	9.0	7.7	7.3	8.0	7.9	7.5
Over $10.00 and under $11.00	.....	.2	.5	.....	.5	.2	.2	.3
$11.00	2.6	2.7	2.5	1.2	.8	1.7	1.4	1.2
Over $11.00 and under $12.00	.....	.3	.1	.....	.1	.1	.2	.1
$12.00	5.1	5.8	6.1	5.9	4.2	4.6	4.4	4.2
Over $12.00 and under $15.00	3.0	4.5	2.5	1.5	2.5	2.2	2.0	1.4
$15.00	2.8	4.7	3.5	3.1	2.4	3.0	2.3	2.5
Over $15.00 and under $20.00	1.9	3.4	3.8	2.3	1.7	2.4	1.7	1.4
$20.00	.6	1.8	1.2	.5	.5	1.0	1.2	.5
Over $20.00	1.6	3.0	2.2	2.1	1.7	1.5	1.3	.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Some of the results shown by these tables may be more readily understood by noting the number of employes in each city or group of cities or towns who receive less than a stated wage per week. If eight dollars per week be considered a living wage for female employes eighteen years of age or over, we find that at the time the investigation was made the following numbers and percentages of employes were receiving less than eight dollars per week:

	Number.	*Percentage of whole number reported.*
Cincinnati	1,223	48.2
Cleveland	805	35.7
Columbus	788	46.9
Dayton	468	53.2
Toledo	773	57.0
Cities of 25,000 and under 100,000 population	1,307	56.7
Cities of 10,000 and under 25,000 population	938	58.1
Towns under 10,000 population	1,287	64.2

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If instead of eight dollars, we assume that seven dollars per week are sufficient to constitute a living wage, we find the following numbers and percentages of employes eighteen years of age or over receiving less than this sum:

	Number.	*Percentage of whole number reported.*
Cincinnati	873	34.4
Cleveland	472	20.9
Columbus	586	34.8
Dayton	267	30.4
Toledo	532	39.2
Cities of 25,000 and under 100,000 population	1,013	43.9
Cities of 10,00 and under 25,000 population	655	40.6
Towns under 10,000 population	982	48.9

Taking a still smaller sum to represent a supposed living wage, we find that the following numbers and percentages of employes eighteen years of age or over received less than six dollars per week:

	Number.	*Percentage of whole number reported.*
Cincinnati	490	19.3
Cleveland	254	11.3
Columbus	353	21.0
Dayton	128	14.6
Toledo	310	22.9
Cities of 25,000 and under 100,000 population	621	26.9
Cities of 10,000 and under 25,000 population	374	23.1
Towns under 10,000 population	603	30.1

Girls under eighteen years of age generally receive wages much below those paid to women above that age. The prevailing rates of wages for women eighteen years of age and over in Ohio mercantile establishments, as we have already noted, are from six to eight dollars: the prevailing rates for girls under eighteen are from three to five dollars. The following statement shows the numbers and percentages of girls under eighteen years of age who received less than five dollars per week in each of the five large cities and in groups of smaller cities:

	Number.	*Percentage of whole number reported.*
Cincinnati	354	85.5
Cleveland	187	62.1
Columbus	39	81.3
Dayton	16	41.0
Toledo	51	65.4
Cities of 25,000 and under 100,000 population	75	73.5
Cities of 10,000 and under 25,000 population	42	70.0
Towns under 10,000 population	55	82.1

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Taking a four dollar wage as the test, we find the following number and percentage of girls under eighteen years of age receiving less than this amount:

	Number.	*Percentage of whole number reported.*
Cincinnati	254	61.4
Cleveland	87	28.9
Columbus	33	68.8
Dayton	12	30.8
Toledo	22	28.2
Cities of 25,000 and under 100,000 population	31	30.4
Cities of 10,000 and under 25,000 population	25	41.7
Towns under 10,000 population	45	67.2

The following numbers and percentages of girls under eighteen years of age received less than three dollars per week at the time the investigation was made:

	Number.	*Percentage of whole number reported.*
Cincinnati	96	23.2
Cleveland	32	10.6
Columbus	9	18.8
Dayton	..	....
Toledo	2	2.6
Cities of 25,000 and under 100,000 population	20	19.6
Cities of 10,000 and under 25,000 population	14	23.3
Towns under 10,000 population	36	53.7

A study of these figures shows that the percentages of female employes in the low wage groups are in almost all cases lower in Cleveland than in any of the other large cities or in any of the groups of cities shown in the tables. Generally speaking, however, there is no apparent connection between the size of the city and its wage scale for female employes in mercantile establishments. Thus Dayton, the fifth city in size, shows generally lower percentages in the low wage groups than do any of the three larger cities, Cincinnati, Columbus and Toledo. Another anomaly is shown in the fact that the cities having a population of 10,000 and under 25,000 each show in many cases smaller percentages of employes in the low wage groups than do the cities having a population of 25,000 and under 100,000. These facts tend to emphasize the statement already made that other considerations than the cost of living contribute to differences in the wage scale.

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Another interesting situation for those persons who are interested in the question of a minimum wage is revealed by the following table which shows that the very low wage groups are found in only a portion of the establishments in each city or group of cities.

TABLE 6 — NUMBER OF MERCANTILE ESTABLISHMENTS REPORTING FEMALES EMPLOYED BELOW CERTAIN RATES PER WEEK.

Cities.	Total Number of Establishments Reporting.	Number of Establishments Employing Females 18 Years of Age and Over at Less Than $6 Per Week.	Number of Establishments Employing Females Under 18 Years of Age at Less Than $4 Per Week
Cincinnati	88	47	23
Cleveland	118	35	28
Columbus	72	42	9
Dayton	33	10	5
Toledo	49	13	5
Cities of 25,000 and under 100,000 population	135	79	16
Cities of 10,000 and under 25,000 population	170	104	15
Towns under 10,000	421	230	13
Total	1,086	560	114

The reader should of course understand that the establishments reported as paying low wages to their female employes do not necessarily, or even generally, pay these low wages to all their employes. The table nevertheless shows that a very large percentage of mercantile establishments do not find it necessary to pay to any of their female employes such low wages as are represented by less than six dollars a week for adults and less than four dollars a week for girls under eighteen. Furthermore, it should be said that a partial explanation of the fact that relatively few establishments are reported as paying less than four dollars a week to girls under eighteen is found in the circumstance that many establishments do not employ girls under eighteen.

A general summary of the hours of work per week in the mercantile establishments reporting shows that of the 14,586 female employes 18 years of age and over for whom hours were definitely reported:

3,179, or 21.8 per cent of the total, worked 51 and under 52 hours per week.

3,021, or 20.7 per cent of the total, worked 54 hours per week.

2,574, or 17.7 per cent of the total, worked 48 and under 50 hours per week.

2,427, or 16.6 per cent of the total, worked 52 and under 53 hours per week.

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Of the 1,097 female employes under 18 years of age for whom hours were definitely reported.

696, or 63.4 per cent of the total, worked 48 hours per week.

The more detailed summary which follows shows the number and per cent of female employes reported working each classified number of hours per week.

TABLE 7—HOURS OF WORK PER WEEK OF FEMALE EMPLOYES 18 YEARS OF AGE AND OVER, IN MERCANTILE ESTABLISHMENTS REPORTING.

Hours Worked Per Week.	Numbers Working Each Classified Number of Hours.	Per Cent. Working Each Classified Number of Hours.
Less than 42	456	3.1
42 and under 48	688	4.7
48 and under 50	2,574	17.7
50 and under 51	818	5.6
51 and under 52	3,179	21.8
52 and under 53	2,427	16.6
53 and under 54	983	6.7
54	3,021	20.7
Over 54	440	3.0
Total	(a) 14,586	100.0

a Not including 49 for whom hours were not specified.

TABLE 8—HOURS OF WORK PER WEEK OF FEMALE EMPLOYES UNDER 18 YEARS, IN MERCANTILE ESTABLISHMENTS REPORTING.

Hours Worked Per Week.	Numbers Working Each Classified Number of Hours	Per Cent. Working Each Classified Number of Hours.
Less than 42	56	5.1
42 and under 48	155	14.1
48	689	62.8
Over 48	197	18.0
Total	(a) 1,097	100.0

a Not including 12 for whom hours were not specified.

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The final hour tables show for each city or group the number and percent of female employes, in the mercantile establishments reporting, working each classified number of hours per week. Table 9 shows numbers and Table 10 shows percentages. It may be said that practically all employes reported as working less than 42 hours per week and many of those who are employed 42 hours and under 48 hours per week are apprentices, waitresses during lunch hours, or other help irregularly employed.

TABLE 9— NUMBER OF FEMALE EMPLOYES IN MERCANTILE ESTABLISHMENTS WORKING EACH CLASSIFIED NUMBER OF HOURS PER WEEK, BY CITIES AND BY AGE GROUPS.

EIGHTEEN YEARS OF AGE AND OVER.

Hours Worked Per Week.	Cincinnati.	Cleveland.	Columbus.	Dayton.	Toledo.	Cities 25,000 and under 100,000.	Cities 10,000 and under 25,000.	Towns under 10,000.
Less than 42	95	116	47	5	103	18	36	36
42 and under 48	401	39	156	6	29	13	9	35
48 and under 50	457	986	29	14	422	471	103	92
50 and under 51	86	147	.....	2	332	101	99	51
51 and under 52	585	518	941	651	84	223	52	175
52 and under 53	372	76	98	38	119	874	411	439
53 and under 54	5	152	66	38	6	151	261	204
54	506	186	318	109	305	415	594	589
Over 54	27	35	25	16	6	27	44	260
Hours not specified	2	.....	3	.....	.....	14	6	24
Total	2,535	2,255	1,683	879	1,356	2,307	1,615	2,005

UNDER EIGHTEEN YEARS OF AGE.

Less than 42	13	4	11	7	.....	2	3	16
42 and under 48	127	5	7	.....	5	7	1	3
48	257	217	18	5	70	65	41	16
Over 48	16	71	12	27	3	28	15	25
Hours not specified	1	4	.....	.....	.....	.....	.....	7
Total	414	301	48	39	78	102	60	67

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TABLE 10 — PER CENT OF FEMALE EMPLOYES IN MERCANTILE ESTABLISHMENTS WORKING EACH CLASSIFIED NUMBER OF HOURS PER WEEK, BY CITIES AND BY AGE GROUPS.

EIGHTEEN YEARS OF AGE AND OVER.

Hours Worked Per Week.	Cincinnati.	Cleveland.	Columbus.	Dayton.	Toledo.	Cities 25,000 and under 100,000.	Cities 10,000 and under 25,000.	Towns under 10,000.
Less than 42	3.8	5.1	2.8	0.6	7.6	0.8	2.2	1.8
42 and under 48	15.8	1.7	9.3	.7	2.1	.6	.6	1.8
48 and under 50	18.0	43.7	1.7	1.6	31.1	20.5	6.4	4.6
50 and under 51	3.4	6.5	.....	.2	24.5	4.4	6.2	2.6
51 and under 52	23.1	23.0	56.0	71.1	2.4	9.7	3.2	8.8
52 and under 53	14.7	3.4	5.8	4.3	8.8	38.1	25.5	22.2
53 and under 54	.2	6.7	3.9	4.3	.4	6.6	16.2	15.3
54	19.9	8.2	18.9	12.4	22.5	18.1	36.9	29.7
Over 54	1.1	1.6	1.5	1.8	.4	1.2	2.7	13.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

UNDER EIGHTEEN YEARS OF AGE.

Less than 42	3.1	1.3	20.8	.....	.....	2.0	5.0	26.7
42 and under 48	30.8	1.7	14.6	.....	6.4	6.9	1.7	5.0
48	62.2	73.1	37.5	12.8	89.7	63.7	68.3	26.7
Over 48	3.9	23.9	27.1	87.2	3.8	27.4	25.0	41.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

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THE INDUSTRIAL COMMISSION OF OHIO

DEPARTMENT OF
INVESTIGATION AND STATISTICS

REPORT No. 3

STATISTICS
OF
MINES and QUARRIES
IN OHIO

1913

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INTRODUCTORY NOTE.

This report presents statistics of the mines and quarries of Ohio for the year ending December 31, 1913, and relates to the following industries:

Coal Mines.
Fire Clay Mines.
Limestone Quarries.
Gypsum Mines.
Iron Mines.

Prior to the year 1913, the statistical reports on mines and mining were included in the annual reports of the Chief Inspector of Mines. On September 1, 1913, the office of the Chief Inspector of Mines ceased to have a legal existence and the work of the mining department was placed under the supervision of the Industrial Commission of Ohio. The statistical work which had been performed by this and other departments coming under the direction of the Industrial Commission was assigned to the Department of Investigation and Statistics, which now issues all statistical reports relating to the work of the Industrial Commission.

Inasmuch as the work of the year 1913 was for a time under the direction of the Chief Inspector of Mines, and later under the direction of the Industrial Commission, the statistical report for this year reflects the work of the two-fold organizations.

The form of presenting the statistics has been changed to a considerable degree in this report from that of earlier years, but an effort has been made to include in the tables the same classes of statistics as were furnished by the earlier reports. Several new tables have been added, mostly relating to accidents, and the summary tables given in the earlier part of the report will enable the general reader to ascertain at a glance the principal changes which have taken place in the mining industries of the State during recent years.

One important change soon to be made in the accident statistics should be noted. The reports of preceding years have classified accidents as fatal, serious and minor. The present report follows the same classification, but has described serious accidents as being those which resulted in a disability of more than three weeks and minor accidents as those which caused a disability of three weeks or less.

Since the Workmen's Compensation Act of Ohio, which became compulsory on January 1, 1914, provides in itself a certain classification of accidents for purposes of compensation, future accident reports

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issued by this Commission will conform to that classification. Such a report, which will include accidents in mines as well as in other industries for the first six months of 1914, is now being prepared for publication and will be issued as Report No. 4 of the Department of Investigation and Statistics.

The report of the Division of Mines, Department of Inspection of the Industrial Commission (formerly Chief Inspector of Mines), which deals with the work of the mine inspectors, will be published by the Industrial Commision as a separate report.

The data for the present report were obtained from schedules collected from operators by the Division of Mines and were tabulated in the Department of Investigation and Statistics under the direction of Fred C. Croxton, Chief Statistician. The final preparation of the report was in the hands of Edith M. Miller, Assistant Statistician, who also furnished the text of the report.

M. B. HAMMOND,
Commissioner in Charge of Investigation and Statistics.

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COAL MINES.

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COAL MINES.

PRODUCTION.

Total Production.

During the year ending December 31, 1913, the coal mines of Ohio produced 36,285,468 tons (a) of coal.

The total coal production for the United States during the year, according to advance figures furnished in manuscript by the United States Geological Survey, was 478,523,203 tons. Ohio, according to figures from the same source, ranks fourth among the states of the Union as a coal-producer, being surpassed by Pennsylvania, West Virginia and Illinois. During the year 1913, the state produced 7.6 per cent of the total coal product of the country (b).

Production for 1913 Compared With Preceding Years.

The total production for the year 1913 is the largest annual production in the history of the coal industry of the state, the output having practically doubled since 1900.

Compared with certain preceding years, the per cent of increase was as follows:

5.3	per cent	greater	than	in 1912.
19.6	per cent	greater	than	in 1911.
5.4	per cent	greater	than	in 1910.
30.7	per cent	greater	than	in 1909.
38.0	per cent	greater	than	in 1908.
12.1	per cent	greater	than	in 1907.
33.3	per cent	greater	than	in 1906.
40.5	per cent	greater	than	in 1905.
86.8	per cent	greater	than	in 1900.
165.1	per cent	greater	than	in 1895.
207.8	per cent	greater	than	in 1890.

The average annual production for the five years, 1908 to 1912, inclusive, was 30,650,823 tons. The production for 1913 was, therefore, 18.4 per cent over the five year average.

Mines in Operation.

The total number of mines reported in operation during the year 1913, was 944. Of this number, 475 were reported as employing ten men or more.

(a) The short ton of 2,000 lb. is used throughout this report, and all figures are for total production, including all grades of coal mined.

(b) Computed on the basis of a total product for the state of 36,285,468 tons, the total for the state as shown by the Bureau of Mines, which is slightly higher than the total for Ohio according to the U. S. Geological Survey.

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Leading Counties.

Almost three tons out of every ten tons produced in Ohio in 1913 were mined in Belmont county, while seven out of the thirty coal producing counties produced 30,306,137 tons or 83.5 per cent of the coal mined in Ohio. The number of tons mined in the seven counties which led in the production of coal and the per cent of the total tonnage of the state produced by each of these seven counties was as follows:

County.	*Tons produced in 1913.*	*Per cent of total tonnage of State.*
Belmont	10,454,795	28.8
Athens	5,239,631	14.4
Jefferson	5,095,024	14.0
Guernsey	4,324,682	11.9
Perry	2,217,816	6.1
Hocking	1,587,163	4.4
Tuscarawas	1,387,026	3.8

Pick and Machine Mined Coal.

Of the total production in 1913, 32,593,545 tons, or 89.8 per cent, were machine mined, and 3,691,923 tons were pick mined.

Machine mined coal was first reported to the Bureau of Mines in 1889, when it constituted 8.3 per cent of the tonnage. Since that year, the proportion of machine mined coal has steadily increased. Of the total tonnage

89.8 per cent was machine mined in 1913.
89.1 per cent was machine mined in 1912.
88.6 per cent was machine mined in 1911.
87.4 per cent was machine mined in 1910.
83.4 per cent was machine mined in 1909.
82.2 per cent was machine mined in 1908.
79.9 per cent was machine mined in 1907.
76.1 per cent was machine mined in 1906.
73.6 per cent was machine mined in 1905.
48.7 per cent was machine mined in 1900.
22.8 per cent was machine mined in 1895.
9.7 per cent was machine mined in 1890.

Proportion of Machine Mined Coal in Leading Counties.

In six of the seven most important coal-producing counties, more than ninety per cent of the coal was machine mined, while in four of these more than ninety-five per cent was machine mined. In Tuscarawas County, however, one of the seven leading coal counties, less than half of the coal was machine mined.

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The per cent which machine mined coal was of the total product of the seven leading counties is shown below:

County.	*Total tonnage for 1913.*	*Per cent machine mined.*
Belmont	10,454,795	98.5
Athens	5,239,631	97.5
Jefferson	5,095,024	95.4
Guernsey	4,324,682	99.2
Perry	2,217,816	90.2
Hocking	1,587,163	90.4
Tuscarawas	1,387,026	45.5

Mining Machines.

There were 1653 mining machines reported in use in Ohio in 1913, an increase of 104 machines over the preceding year. In 1904, there were 975 machines reported as in use. During the nine years since that time, therefore, the number of machines has almost doubled. Of the 1653 machines reported, 1604 were driven by electricity, and 49 by compressed air.

Of the 1653 machines in use, 1310 were reported from the seven leading coal counties of the State as follows:

County.	*Mining machines in use in 1913.*
Belmont	414
Athens	213
Jefferson	254
Guernsey	141
Perry	135
Hocking	72
Tuscarawas	81

Number of Tons of Coal Cut per Machine.

The average amount of coal cut during the year 1913 per machine, was 19,718 tons, a decrease of 85 tons below the average for 1912, which was 19,803 tons per machine.

The average number of tons cut per day during 1913 per machine was 96.7 tons, a decrease of 3.3 tons per day for each machine below the average for 1912, which was 100 tons per day.

The average production by each machine for the year 1913, and the average production per day are shown below for the seven leading coal counties of the State.

County.	*Average number of tons of coal cut per year per machine.*	*Average number of tons of coal cut per day per machine.*
Belmont	23,189	105.4
Athens	23,994	129.7
Jefferson	19,142	91.2
Guernsey	30,440	137.7
Perry	14,819	82.8
Hocking	19,939	111.4
Tuscarawas	7,784	32.8

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Haulage Motors.

The coal mines of Ohio during the year ending December 31, 1913, had in use 612 haulage motors, an increase of 87 over the number in use during the preceding year, when but 525 were reported.

CHARACTER OF OPENINGS.

Of the 944 mines in operation during 1913, 707 were drift openings, 128 were slope openings, and 109 were shaft openings.

The 424 mines in the seven leading counties, classified as to kind of openings, were as follows:

County.	Total number of mines in operation.	Number of mines having each specified kind of opening.		
		Drift.	Slope.	Shaft.
Belmont	97	80	12	5
Athens	57	29	10	18
Jefferson	67	58	3	6
Guernsey	45	17	11	17
Perry	54	40	10	4
Hocking	36	33	3	..
Tuscarawas	68	63	5	..

VENTILATION.

Classified by kind of ventilation, 355 of the 944 mines in operation were ventilated by fans, 187 by furnace, 35 by fire-basket, 14 by exhaust steam, and 353 had natural ventilation, the latter being for the most part small mines.

The 424 mines in the seven counties of the State leading in the commercial production of coal were ventilated as follows:

County.	Total number of mines in operation.	Number of mines having each specified kind of ventilation.				
		Fan.	Furnace.	Fire Basket.	Exhaust Steam.	Natural.
Belmont	97	61	20	2	1	13
Athens	57	49	2	1	..	5
Jefferson	67	36	12	2	..	17
Guernsey	45	25	4	1	..	15
Perry	54	25	4	3	..	22
Hocking	36	16	3	3	1	13
Tuscarawas	68	20	30	4	..	14

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EMPLOYES.

Number of Employes.

Forty-eight thousand, four hundred and twenty employes were reported as engaged in coal mining in 1913. This was a slight gain over the number reported in 1912, but a slight decline below 1908 and 1910. A comparison of the number of employes reported for 1913 with the number reported for each of several preceding years shows *increases* as follows:

2.5 per cent as compared with 1912.
Less than one-tenth of one per cent as compared with 1911.
3.0 per cent as compared with 1909.
1.1 per cent as compared with 1907.
4.1 per cent as compared with 1906.
9.6 per cent as compared with 1905.
52.7 per cent as compared with 1900.
67.0 per cent as compared with 1895.
118.2 per cent as compared with 1890.

Comparison of the number of employes reported in 1913 with the number reported in the specified years below shows *decreases* of:

0.8 per cent as compared with 1910.
3.7 per cent as compared with 1908.

Counties Leading in Number of Employes.

100 employes or more were reported from each of 24 counties. Belmont County reported 11,383 coal mine employes, or 23.5 per cent of the total for the state. Athens county was second with 7,534 employes or 15.6 per cent of the total. The first ten counties arranged in the order of the number of men employed in their mines, together with the per cent which these employes were of the total number for the State, were as follows:

County.	*Number of employes.*	*Per cent of total employes in coal mines of State.*
Belmont	11,383	23.5
Athens	7,534	15.6
Jefferson	6,242	12.9
Guernsey	4,755	9.8
Perry	3,395	7.0
Hocking	2,287	4.7
Jackson	1,890	3.9
Tuscarawas	1,845	3.8
Meigs	1,284	2.7
Stark	1,009	2.1

These ten counties employed 41,624 or 86.0 per cent of the total number of persons engaged in this industry in the state.

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Employes in Pick Mines.

The number of men reported employed in pick mines in 1913 was 7,303, while 41,117 men were employed in machine mines. The number employed in pick mines was smaller than in any preceding year recorded. The pick miners also constituted in 1913 a lower per cent of the total number of persons employed in coal mining than in other years. Below is shown the per cent which the pick miners constituted of the total number of coal mine employes in the State for certain specified years.

Per cent of total employes in pick mines.	*Year.*
15.1	1913
16.6	1912
16.0	1911
19.7	1910
22.0	1909
23.7	1908
27.0	1907
28.2	1906
32.0	1905

Employes in Pick and Machine Mines for the Leading Counties.

The different counties of the state show a wide variation in the proportion of employes at work in pick and machine mines. The ten leading counties of the state, according to the number of men employed in coal mining during the year 1913, reported the following percentages of employes in pick mines:

County.	*Per cent of total employes in pick mines.*
Belmont	2.2
Athens	2.6
Jefferson	6.4
Guernsey	1.5
Perry	8.7
Hocking	9.0
Jackson	54.3
Tuscarawas	55.7
Meigs	10.4
Stark	80.5

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The ten counties reporting the largest number of persons employed in pick mines for 1913, in the order of the number employed were:

County.	*Number of employes in pick mines.*
Tuscarawas	1,028
Jackson	1,027
Stark	812
Coshocton	541
Lawrence	497
Jefferson	402
Muskingum	334
Columbiana	310
Perry	294
Belmont	253

Employes in Pick Mines by Occupations.

The seven thousand, three hundred and three employes reported in pick mines for the year ending December 31, 1913, were reported by occupations as follows:

5423 or 74.3 per cent were pick miners.
1137 or 15.6 per cent were inside day hands.
743 or 10.2 per cent were outside day hands.

The ten counties reporting the largest number of persons employed in machine mines for 1913, in the order of the number employed in machine mines in each county and the per cent which this number was of the total employes in machine mines of the State, are shown below:

County.	*Number employes in machine mines.*	*Per cent of total employes in machine mines.*
Belmont	11,130	27.1
Athens	7,336	17.8
Jefferson	5,840	14.2
Guernsey	4,686	11.4
Perry	3,101	7.5
Hocking	2,082	5.1
Meigs	1,150	2.8
Jackson	863	2.1
Tuscarawas	817	2.0
Noble	756	1.8

Employes in Machine Mines by Occupations.

Forty-one thousand, one hundred and seventeen persons were employed in machine mines in the State in 1913. This represents an increase over the preceding year of 4.4 per cent of the total number.

3,750 or 9.1 per cent were machine miners and helpers.
25,873 or 62.9 per cent were drillers, shooters and loaders.
7,295 or 17.7 per cent were inside day hands.
4,199 or 10.2 per cent were outside day hands.

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Average Number of Days Worked by Pick Miners.

The pick miners of the State averaged 189 working days during 1913, an increase of 16 days over 1912. The average number of days per year worked by pick miners annually since 1904 is shown below:

Year.	*Average days worked by pick miners per year.*
1913	189
1912	173
1911	168
1910	168
1909	182
1908	160
1907	191
1906	176
1905	169
1904	159

Tons Produced Per Employe in Pick Mines.

The average number of tons of coal produced during 1913 per employe in the pick mines of the State, including miners and inside and outside day hands, was 506 tons. The average number of tons produced per day per employe in pick mines was 2.7 tons.

Tons Produced per Pick Miner.

The average number of tons of coal produced per pick miner, for the State, in 1913, was 681 tons, an increase of 40 tons over 1912. The average production per pick miner for the year 1913 was higher than for any other year for which the Bureau of Mines has records. The production for certain years was as follows:

Year.	*Average number of tons mined per pick miner per year.*
1913	681
1912	641
1911	597
1910	602
1909	595
1908	518
1907	676
1906	661
1905	653
1900	411
1895	568

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The average number of tons of coal mined per day per pick miner, for the State, in 1913 was 3.6 tons. Below are shown the daily averages for certain specified years:

Year.	*Average number of tons mined per pick miner per day.*
1913	3.6
1912	3.7
1911	3.6
1910	3.6
1909	3.3
1908	3.2
1907	3.5
1906	3.8
1905	3.9
1900	2.4
1895	3.4

Average Number of Days Worked by Machine Runners and Helpers.

The machine runners and helpers in the coal mines of the State averaged 204 working days during 1913, an increase of 6 days over 1912. This is the highest average for the last ten years with the exception of 1907, when the average was 206 days. The average number of days worked by machine runners and helpers annually since 1904 is shown below:

Year.	*Average days worked by machine runners and helpers per year.*
1913	204
1912	198
1911	174
1910	201
1909	171
1908	157
1907	206
1906	173
1905	173

Tons Produced Per Employe in Machine Mines.

The average number of tons of coal produced during 1913 per employe in the machine mines of the State, including machine runners and helpers, drillers, shooters, and loaders, and inside and outside day hands was 793 tons. The average number of tons produced per day per employe in machine mines was 3.8 tons, as compared with 2.7 tons per employe in pick mines.

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Tons Produced Per Machine Runner and Helper.

The average number of tons of coal cut per machine runner or helper, for the State during 1913, was 8,690 tons, a decrease of 150 tons below the average for 1912, which was 8,840 tons. The average, however, was exceeded only by that for three recorded years, namely, 1902, with an average of 9,478 tons, 1907, with an average of 8,725 tons, 1910, with an average of 9,136 tons, and 1912 as already noted. The average amount cut per machine runner or helper for certain years was as follows:

Year.	*Average number of tons cut per machine runner or helper per year.*
1913	8,690
1912	8,840
1911	7,904
1910	9,136
1909	7,327
1908	6,823
1907	8,725
1906	7,155
1905	7,255
1900	8,467
1895	6,981

The average number of tons of coal cut per day by each machine runner or helper for the State, in 1913, was 42.6 tons. The average production per day by each machine runner or helper for certain years was as follows:

Year.	*Average number of tons cut per machine runner or helper per day.*
1913	42.6
1912	44.6
1911	45.4
1910	45.5
1909	42.8
1908	43.5
1907	42.4
1906	41.4
1905	41.8
1900	47.4
1895	44.7

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Average Number of Days Worked by Drillers, Shooters, and Loaders.

The drillers, shooters, and loaders in the machine mines of the State averaged 206 working days during 1913, an increase of 7 days over 1912. This is the highest average for any year for which the Bureau of Mines has a record, with the exception of 1910, when the average was 209 days.

The average number of days worked by drillers, shooters and loaders annually since 1904 is shown below:

Year.	*Average days worked by drillers, shooters and loaders per year.*
1913	206
1912	199
1911	175
1910	209
1909	172
1908	157
1907	201
1906	173
1905	169
1904	169

Tons Produced Per Driller, Shooter, or Loader.

The average number of tons of coal produced per driller, shooter, or loader, for the State, during 1913, was 1,260, an increase of 42 tons over 1912. The average production per employe of these classes for the year was higher than for any other year for which the Bureau of Mines has a record. The production for certain years was as follows:

Year.	*Average number of tons produced per driller, shooter, or loader per year.*
1913	1,260
1912	1,218
1911	1,015
1910	1,195
1909	972
1908	869
1907	1,187
1906	991
1905	686
1900	1,128
1895	925

The average number of tons of coal produced per day by each driller, shooter, or loader, for the State, in 1913, was 6.1 tons.

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The average production per day per driller, shooter, or loader for certain specified years is given below:

Year.	*Average number of tons produced per driller, shooter, or loader per day.*
1913	6.1
1912	6.1
1911	5.8
1910	5.7
1909	5.7
1908	5.5
1907	5.8
1906	5.7
1905	4.0
1900	6.3
1895	5.9

ACCIDENTS.

Number of Accidents During 1913.

During the year ending December 31, 1913, there were 162 men killed, 530 were reported as so seriously injured as to be disabled for more than three weeks (a), and 342 were reported as having suffered injuries which incapacitated them for three weeks or less (a) making a total of 1,034 injuries which were reported. Comparing these figures with those for 1912, we find that in the preceding year 136 fatal injuries, 395 causing a disability of more than three weeks, and 195 causing a disability of three weeks or less were reported, making an increase of 26 fatal accidents, 135 accidents producing a disability of more than three weeks, and 147 accidents disabling for three weeks or less.

Our interest necessarily centers in fatal accidents and those disabling for three weeks, not only because of the nature of the results, but because the element of uncertainty as to the completeness of reports, always present in accident statistics, (except where a state compensation system exists), is considerably lessened in the case of those accidents which are certain to attract the attention of the communities where they occur.

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The number of fatal accidents, and accidents resulting in an incapacity of more than three weeks, occurring in the mines of the State for certain specified years was as follows:

Year.	*Fatal Accidents.*	*Accidents resulting in a disability of more than three weeks.*(a)
1913	162	530
1912	136	395
1911	109	375
1910	161	471
1909	115	467
1908	112	426
1907	153	493
1906	127	384
1905	114	372
1900	68	207
1895	52	152
1890	42	52

Fatal Accidents in Certain Counties.

Belmont County, which produces 28.8 per cent of the coal tonnage of the State, reports 58 out of the 162 fatal accidents which occurred in the coal mines of Ohio during 1913, Jefferson County, producing 14.0 per cent of the coal, being second in the number of fatal accidents, 25 being reported.

In each of seven counties, ten or more fatal accidents occurred during the year, and from these counties 134 of the 162 fatal accidents in the State were reported. These counties were:

County.	*Number of Fatal Accidents.*
Belmont	58
Jefferson	25
Noble	18
Athens	13
Guernsey	10
Perry	10

(a) Accidents resulting in a disability of more than three weeks are those classed as "serious accidents" in former reports of the Bureau of Mines, while those formely designated as "minor accidents" are now designated as accidents resulting in a disability of three weeks or less.

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Accidents Resulting in a Disability of More than Three Weeks, by Counties. (*a*)

The accidents of this class showed a distribution varying somewhat from that of fatal accidents. The counties reporting during 1913 ten or more accidents resulting in a disability of more than three weeks, and the number occurring in each county, are shown below in the order of numbers. These eleven counties reported 484 of the 530 accidents of this class reported during the year.

County.	*Accidents resulting in a disability of more than three weeks.*(a)
Belmont	125
Jefferson	94
Athens	77
Guernsey	46
Perry	39
Noble	34
Jackson	17
Columbiana	16
Hocking	14
Tuscarawas	12
Meigs	10

Accidents Resulting in a Disability of Three Weeks or less. (*b*)

The counties reporting ten or more accidents resulting in a disability of three weeks or less during 1913 arranged in order of numbers, and the number of accidents of this class occurring in each, are given below. These eight counties reported a total of 300 out of 342 accidents resulting in a disability of three weeks or less, reported in the mines of the State during the year:

County.	*Accidents resulting in a disability of three weeks or less*
Belmont	85
Athens	66
Jefferson	34
Guernsey	32
Noble	24
Perry	23
Tuscarawas	23
Hocking	13

(a) Accidents resulting in a disability of more than three weeks were classed as "serious accidents" in former reports of the Bureau of Mines.

(b) Accidents resulting in a disability of three weeks or less were classed as "minor accidents" in former reports of the Bureau of Mines.

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Causes of Accidents in 1913.

The 1,034 accidents which were reported in the coal mines of Ohio for the year ending December 31, 1913, divide themselves into eight main classes, as to cause. It is a striking fact, however, that two causes were responsible for 62.5 per cent or almost two-thirds of the 1,034 accidents of the State, during the year; namely, falls of roof and mine cars. The 1,034 accidents were distributed by cause as follows:

Per cent.	*Cause to which ascribed.*
35.7	Falls of roof.
26.8	Mine cars.
8.4	Falls of coal.
5.1	Mining machines.
3.3	Explosions, powder.
2.9	Motors.
2.0	Explosions, gas.
1.5	Electricity.
14.3	Miscellaneous causes.

Causes of Fatal Accidents.

Of the 162 fatal accidents two causes, falls of roof and mine cars, were responsible for 72.2 per cent. The distribution of fatal accidents by cause was as follows:

Per cent.	*Cause to which ascribed.*
54.9	Falls of roof.
17.3	Mine cars.
9.3	Explosions of gas.
5.6	Electricity.
3.7	Explosions of powder.
2.5	Motors.
1.2	Falls of coal.
1.2	Mining machines .
4.3	Miscellaneous causes.

Causes of Accidents Resulting in a Disability of More than Three Weeks.

Falls of roof also led as a cause of accidents involving a disability of more than three weeks, 37.7 per cent of the 530 accidents of this class being attributed to this cause, while 27.5 per cent were ascribed to mine cars, making a total of 65.2 per cent which were due to these two causes. The distribution of accidents resulting in a disability of more than three weeks by cause was as follows:

Per cent.	*Cause to which ascribed.*
37.7	Falls of roof.
27.5	Mine cars.
8.3	Falls of coal.
5.7	Mining machines.
4.0	Explosions of powder.
3.4	Motors.
0.7	Explosions of gas.
0.2	Electricity.
12.5	Miscellaneous causes.

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Causes of Accidents Resulting in a Disability of Three Weeks or Less.

Mine cars led as a cause of accidents involving a disability of three weeks or less, being responsible for 30.1 per cent of the total of 342 accidents of this class, while falls of roof were the cause of the second largest number, being responsible for 23.4 per cent, the two causes jointly being responsible for 53.5 per cent of the accidents of this class. The distribution of accidents resulting in a disability of three weeks or less according to cause for the year 1913 was as follows:

Per cent.	*Cause to which ascribed.*
30.1	Mine cars.
23.4	Falls of roof.
12.0	Falls of coal.
6.2	Mining machines.
2.3	Motors.
2.0	Explosions, powder.
1.5	Electricity.
0.6	Explosions, gas.
21.9	Miscellaneous.

Causes of Accidents in Preceding Years.

By rearrangement of the tables in the preceding reports of the Bureau of Mines, comparative data become available for accidents classified by causes during the nine years from 1905 to 1913 inclusive. Such comparison shows that the per cent of accidents attributed to each of the main causes has been remarkably uniform.

TOTAL ACCIDENTS BY CAUSE, 1905 TO 1913.

Falls of Roof.

Considering all accidents together, without regard to the degree of disability, falls of roof have led as a cause continuously throughout the period. Below are shown the percentages due to this cause in each of the specified years. It will be seen that the per cent of all accidents ascribed to this cause during the nine years was lowest in 1913, when 35.7 per cent were ascribed to it, and highest in 1912, when falls of roof were responsible for 47.0 per cent of the accidents which occurred.

Year.	*Per cent of accidents of all classes ascribed to falls of roof.*
1913	35.7
1912	47.0
1911	43.8
1910	43.6
1909	43.1
1908	43.4
1907	41.7
1906	40.5
1905	42.2

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Mine Cars.

Mine cars have been second as a cause of accidents of all classes considered together during the years 1905-1913. The percentages ascribed to this cause have varied from 30 per cent in 1905 to 24.0 per cent in 1910. The percentages ascribed to this cause for each of the nine years under consideration are shown below:

Year.	*Per cent of accidents of all classes ascribed to mine cars.*
1913	26.8
1912	25.5
1911	24.4
1910	24.0
1909	24.5
1908	29.1
1907	25.5
1906	24.9
1905	30.0

Other Causes.

The percentages ascribed to each of the six other specified causes have likewise been fairly constant. Since they are all necessarily small they are not treated separately here, but may be found by reference to the general tables, page 81.

FATAL ACCIDENTS BY CAUSE, 1905-1913.

Falls of Roof.

Falls of roof throughout the nine years from 1905 to 1913 inclusive have been responsible in every year for more than half the fatal accidents in the coal mines of the State, and for the period have been the cause of an average of 62.1 per cent of all fatal accidents. Below are given the percentages ascribed to this cause for each specified year:

Year.	*Per cent of fatal accidents ascribed to falls of roof.*
1913	54.9
1912	68.4
1911	74.3
1910	60.2
1909	59.1
1908	62.5
1907	61.4
1906	59.1
1905	62.8

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Mine Cars.

Mine cars have been second as a cause of fatal accidents during every year of the period under consideration excepting two. In 1906 electricity exceeded them as a cause of death, and in 1911 falls of coal were responsible for a larger percentage of fatal accidents. Below are given the percentages of fatal accidents ascribed to mine cars as a cause, from 1905 to 1913 inclusive:

Year.	*Per cent of fatal accidents ascribed to mine cars.*
1913	17.3
1912	9.6
1911	7.3
1910	11.8
1909	17.4
1908	14.3
1907	10.5
1906	6.3
1905	11.4

Other Causes.

The percentage of fatal accidents ascribed to each of the six other specified causes may be found by reference to the general tables, page 83.

ACCIDENTS RESULTING IN AN INCAPACITY OF MORE THAN THREE WEEKS, BY CAUSE, 1905-1913.

Falls of Roof.

Falls of roof caused practically two-fifths of those accidents resulting in a disability of more than three weeks for every one of the years from 1905 to 1913 inclusive. Below are shown the percentages ascribed to this cause for each of the specified years:

Year.	*Per cent of accidents resulting in a disability of more than three weeks ascribed to falls of roof.*
1913	37.7
1912	46.8
1911	43.5
1910	44.2
1909	42.8
1908	41.8
1907	38.7
1906	37.2
1905	40.1

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Mine Cars.

Mine cars were second as a cause of accidents resulting in a disability of more than three weeks during each of the nine years from 1905 to 1913 inclusive. Below are given the percentages of accidents of this class ascribed to them as a cause:

Year.	*Per cent of accidents resulting in a disability of more than three weeks ascribed to mine cars.*
1913	27.5
1912	26.1
1911	24.3
1910	24.6
1909	25.9
1908	31.7
1907	27.4
1906	27.6
1905	34.7

Other Causes.

The percentages of accidents resulting in a disability of more than three weeks ascribed to each of the six other specified causes may be found by reference to the general tables, page 85.

Accidents and Nationality.

No data are available as to nationality except for fatal accidents. Of the 162 men killed during the year ending December 31, 1913, 77 were American born and 85 were of foreign birth. During 1912, of 136 deaths, 66 were men of American birth and 70 were men of foreign birth.

Accidents in Relation to Number of Men Employed and Tons of Coal Produced.

While the total number of accidents is of great interest, the important question with regard to accident data is whether the number of accidents is increasing or decreasing, when considered in relation to the number of men exposed to risk. The only really accurate measure is the number of accidents per hours exposure, or the so-called "man hour" unit of European accident statistics. The mining industry, however, because of the nature of the work, would be extremely difficult to measure by this standards, and data are not available even for an attempt in this direction.

A fairly satisfactory measure, however, is the number of men employed per accident, and the number of tons of coal mined per accident, these comparisons being limited to fatal accidents and those causing a disability of more than three weeks.

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Fatal Accidents.

During 1913, there was one fatal accident to every 299 men ployed in the mines of Ohio. During 1912 one man was killed to e 347 men employed. The fatal accident rate when measured in rel to the number of men employed, was worse than for any year 1884, when the fatal accidents were first reported to the Burea Mines, to the present. It is only fair, however, in considering the accident rate for the year, to state that of 162 fatal accidents, fi were due to a single gas explosion on Imperial No. 3 mine in Noble co on May 13, fourteen men being killed outright by the explosion fifteenth being a rescuer.

Below is shown the fatal accident rate, when measured by the ber of men employed for certain years:

Year.	*Number of men employed per life lost.*
1913	299
1912	347
1911	444
1910	303
1909	409
1908	449
1907	313
1906	366
1905	388
1900	466
1895	558
1890	528
1885	616

From these figures, it is evident that while there have been irre fluctuations from year to year, the number of fatal accidents, compared to the number of men employed, has steadily increased the development of coal mining in Ohio.

When the fatal accident record for the year 1913 is measur terms of tons of coal mined per accident, we find that one fatal acc occurred in the coal mines of the State during 1913 for every 22 tons of coal mined. For the twelve months ending December 31, there was one fatal accident for every 253,267 tons of coal m

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Below is shown the fatal accident rate for several specified years, as measured by the number of tons of coal mined per life lost:

Year.	*Tons of coal mined per life lost.*
1913	223,984
1912	253,267
1911	278,367
1910	213,820
1909	241,348
1908	234,712
1907	211,542
1906	214,279
1905	226,620
1900	285,686
1895	263,152
1890	280,687
1885	244,256

Accidents Causing a Disability of More than Three Weeks.

When accidents causing a disability of more than three weeks, which occurred during 1913, are considered in relation to the number of men employed and tons of coal mined per accident, we find that one accident of this class occurred to one man out of every 91 employed in the mines of the State. During 1912, one accident producing a disability of more than three weeks occurred to one out of every 120 men employed. Accidents of this class were more numerous in relation to the number of men employed than for any year for which there is record. The rate for accidents of this type, measured in relation to the number of men employed was as follows, for certain years:

Year.	*Number of men employed per accident resulting in a disability of more than three weeks.*
1913	91
1912	120
1911	129
1910	104
1909	101
1908	118
1907	97
1906	121
1905	119
1900	153
1895	191
1890	427
1885	386

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When the accidents causing a disability of more than three weeks are considered in relation to the number of tons of coal mined per accident, we find that during the year ending December 31, 1913, one man was disabled for more than three weeks to every 68,463 tons of coal mined. This rate has been exceeded by the rate for three of the thirty years for which there are records of accidents of this class, namely, 1907, when one accident of this class occurred for every 65,651 tons of coal mined, 1908 with a record of one to every 61,708 tons, and 1909, which had one to every 59,432 tons. The data for several specified years on accidents of this class, measured in terms of tons of coal mined, are as follows:

Year.	*Tons of coal mined per accident resulting in a disability of more than three weeks.*
1913	68,463
1912	87,201
1911	80,912
1910	73,089
1909	59,433
1908	61,708
1907	65,651
1906	70,868
1905	69,448
1900	93,849
1895	90,026
1890	226,709
1885	153,258

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FIRE CLAY MINES.

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FIRE CLAY MINES.

PRODUCTION.

Ohio is the foremost state in the Union in the production of fire clay, an industry which has developed in close relation to the coal industry of the State. During the year ending December 31, 1913, 2,433,121 tons of fire clay were produced, which makes a new record for the State. Compared with certain preceding years, the per cent of increase was as follows:

3.4 per cent greater than in 1912.
5.4 per cent greater than in 1911.
19.9 per cent greater than in 1910.
6.3 per cent greater than in 1909.
21.4 per cent greater than in 1908.
11.8 per cent greater than in 1907.
14.4 per cent greater than in 1906.
19.3 per cent greater than in 1905.
65.2 per cent greater than in 1900.
188.0 per cent greater than in 1890.
192.0 per cent greater than in 1890.

LEADING COUNTIES.

Seventeen counties reported the production of fire clay. Coshocton and Holmes counties, which appeared in the report for 1912, having reported no production, while Vinton county, which produced no fire clay in 1912, reappeared in the list of producing counties for 1913.

Ten of the seventeen clay-producing counties produced over 100,000 tons each, and together produced 93 per cent of the total clay product of the State. They are given below, together with the per cent which the product of each is of the total fire clay product in the State.

County.	*Tons produced in 1913.*	*Per cent of total tonnage of the State.*
Jefferson	471,649	19.4
Tuscarawas	394,900	16.2
Carroll	274,064	11.3
Columbiana	189,879	7.8
Stark	188,872	7.8
Hocking	176,448	7.3
Athens	164,765	6.8
Perry	163,791	6.7
Jackson	120,820	5.0
Summit	117,638	4.8

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EMPLOYES.

The fire clay mines of the State gave employment to an average of 1,227 men during 1913, a decrease of 61 men below the average for 1912. The counties employing 50 or more men in this industry during the years are given below:

County.	*Number of men employed.*
Jefferson	219
Tuscarawas	178
Carroll	153
Stark	109
Columbiana	98
Perry	97
Hocking	88
Athens	79
Scioto	69

AVERAGE DAYS WORKED.

The fire clay mines of the State during the year ending December 31, 1913, averaged 264 days in operation, an increase of 16 days over the average days worked in 1912. The average number of days worked in the ten counties which led in the production of fire clay for the year is given below:

County.	*Average days in operation.*
Jefferson	273
Tuscarawas	259
Carroll	307
Columbiana	250
Stark	275
Hocking	292
Athens	282
Perry	219
Jackson	246
Summit	300

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LIMESTONE QUARRIES.

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LIMESTONE QUARRIES.

PRODUCTION.

The limestone production of Ohio for the year ending December 31, 1913, showed a decline for every class of product except in the amount of stone burned for lime, which was practically double the amount used for lime during 1912.

Limestone Burned for Lime.

1,745,676 tons of limestone were burned for lime in Ohio during 1913, an increase of 860,546 tons or 97.2 per cent over the stone used for that purpose in 1912. Only once before in the period for which there are records for the industry, did the stone used for lime exceed one million tons. This was in 1895, when 1,175,988 tons were burned. Compared with certain preceding years, the per cent of increase was as follows:

97.2 per cent greater than in 1912.
132.1 per cent greater than in 1911.
138.1 per cent greater than in 1910.
88.9 per cent greater than in 1909.
165.2 per cent greater than in 1908.
114.3 per cent greater than in 1907.
166.3 per cent greater than in 1906.
135.8 per cent greater than in 1905.
219.1 per cent greater than in 1900.
48.4 per cent greater than in 1895.
153.1 per cent greater than in 1890.

Leading Counties.

Limestone burned for lime was reported from sixteen counties. Six of these produced more than 50,000 tons each of limestone used for this purpose during the year and together produced 89.4 per cent of the stone produced in the State for making lime. The number of tons produced in each, and the per cent which this production was of the total for the State, is given below:

County.	*Tons produced.*	*Per cent of total for State.*
Franklin	823,559	47.2
Ottawa	394,962	22.6
Marion	102,465	5.9
Van Wert	100,000	5.7
Erie	78,215	4.5
Lawrence	62,461	3.6

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Limestone Used for Fluxing.

2,592,028 tons of limestone were quarried for use as fluxing in the iron and steel industry for the year ending December 31, 1913. This is a decrease of 21.6 per cent below the amount of stone used for fluxing during the preceding year. Compared with certain preceding years, 1913 showed increases as follows:

15.6 per cent more than in 1911.
7.7 per cent more than in 1910.
141.8 per cent more than in 1909.
77.6 per cent more than in 1908.
94.4 per cent more than in 1906.
21.0 per cent more than in 1905.
193.7 per cent more than in 1900.
503.3 per cent more than in 1895.
740.1 per cent more than in 1890.

The production for the year showed decreases as compared with certain preceding years as follows:

21.6 per cent less than in 1912.
4.7 per cent less than in 1907.

Leading Counties.

The entire 2,592,028 tons of stone used for fluxing was produced by seven counties. Of this amount, Ottawa County produced 1,981,921 tons, or 76.5 per cent, and Erie County produced 484,618 tons, or 18.7 per cent, the two jointly having produced 2,466,539 tons or 95.2 per cent of the aggregate product for the State.

Limestone Used for Macadam.

3,390,707 cubic yards of limestone were quarried in the State during the year ending December 31, 1913, for use as macadam. This is a decrease of 4.3 per cent below the production for 1912, but is an increase over the production for all preceding years for which the Bureau of Mines has a record, excepting 1910.

The production for the year showed an increase as compared with certain preceding years as follows:

7.1 per cent greater than in 1911.
9.8 per cent greater thean in 1909.
15.4 per cent greater than in 1908.
19.6 per cent greater than in 1907.
9.2 per cent greater than in 1906.
13.5 per cent greater than in 1905.
167.3 per cent greater than in 1900.
421.5 per cent greater than in 1895.
683.7 per cent greater than in 1890.

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Compared with 1912 and 1910, decreases are as follows:

4.3 per cent less than in 1912.
11.2 per cent less than in 1910.

Leading Counties.

The quarrying of limestone for macadam was much more widely distributed among the counties of the State than quarrying of the stone either for lime or for fluxing. Twenty-eight counties reported limestone as quarried for macadam. Of these, ten reported 100,000 or more cubic yards. The number of cubic yards produced in each of these ten counties, and the per cent which this product was of the total for the State, is given below, in the order of production:

County.	*Production in cubic yards.*	*Per cent of total product for the State.*
Erie	700,000	20.6
Lucas	468,604	13.8
Allen	357,129	10.5
Franklin	337,368	9.9
Wood	266,640	7.9
Hardin	220,440	6.5
Marion	157,055	4.6
Van Wert	125,000	3.7
Seneca	124,600	3.7
Preble	111,600	3.3

Building Stone.

During 1913, 71,936 cubic yards of ordinary building stone were quarried in Ohio, a decrease of 24.3 per cent below the production for 1912. Of the total production for 1913, Marion county produced 22,820 cubic yards or 31.7 per cent of the total for the State, Erie county produced 22,018 cubic yards or 30.6 per cent of the total for the State, and Clark county produced 15,085 cubic yards or 21 per cent of the total for the State.

Stone for Piers and Protection Purposes.

The production of limestone for piers and protection purposes during the year 1913 aggregated 73,841 cubic yards, a decrease of 52,885 cubic yards or 41.7 per cent below the production for 1912. Of the total production in the State for 1913, Lucas County produced 34,096 cubic yards or 46.2 per cent of the total, Franklin County produced 18,317 cubic yards or 24.8 per cent of the total, and Ottawa County produced 17,335 cubic yards or 23.5 per cent of the total.

Stone for Concrete.

The quarries of the State produced 154,186 cubic yards of limestone for use in concrete work during the year ending December 31, 1913.

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This was a decrease of 34,662 cubic yards, or 18.4 per cent below the production for 1912. Of the total product of limestone in Ohio for 1913 for concrete purposes, Ottawa County produced 69,605 cubic yards or 45.1 per cent of the total, Allen County produced 27,473 cubic yards or 17.8 per cent of the total, and Erie County produced 27,167 cubic yards or 17.6 per cent of the total.

EMPLOYES.

The limestone quarries of Ohio gave during the year employment to an average of 3,479 men, a decrease of 723 men below the average for 1912. The number of men employed in limestone production during 1913 was lower than for any year since 1899, when but 3,165 men were employed. The average number of men employed in the limestone quarries for certain years was as follows:

Year.	*Men employed in limestone industry.*
1913	3,479
1912	4,202
1911	4,090
1910	4,361
1909	4,705
1908	4,678
1907	5,420
1906	5,131
1905	4,728
1900	3,680
1895	3,829
1890	2,445

Leading Counties.

The counties employing 100 or more men in their limestone quarries during 1913, are given below in the order of the number employed:

stone industry.	*Men employed in limestone County.*
Ottawa	578
Erie	435
Franklin	434
Marion	414
Wood	190
Lucas	179
Sandusky	137
Clark	136
Allen	111

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Average Days Worked.

The limestone quarries of the State during the year ending Dec. 31, 1913, averaged 278 days in operation, a decrease of 5 days below the average number of days worked for 1912.

Compared with the average days worked in certain preceding years, 1913 shows increases as follows:

53 days over the average of 225 days worked during 1908.
30 days over the average of 248 days worked during 1907.
32 days over the average of 246 days worked during 1906.
33 days over the average of 245 days worked during 1905.
137 days over the average of 141 days worked during 1900.
151 days over the average of 127 days worked during 1895.
107 days over the average of 171 days worked during 1890.

The average of 278 days for 1913 is a decrease as compared to the following years:

5 days below the average of 283 days worked during 1912.
28 days below the average of 306 days worked during 1911.
9 days below the average of 287 days worked during 1910.
7 days below the average of 285 days worked during 1909.

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GYPSUM MINES.

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GYPSUM MINES.

Ohio is, according to the last available report, that for 1912, of the United States Geological Survey on the Mineral Resources of the United States, the third state in the Union in the production of gypsum. The entire product of the state comes from Ottawa County.

The production for 1913 was 268,261 tons, an increase of 13,673 tons, or 5.4 per cent, over the production for 1912. The gypsum mines employed an average of 238 men during the year, an increase of 22 men over the average for 1912, and were in operation an average of 285 days, a decrease of 7 days below 1912.

The following table presents the principal data relating to the gypsum mines of Ohio from 1906 to 1913, inclusive:

Year.	*Tons produced.*	*Average number of men employed.*	*Average number of days worked.*
1906	112,202	193	256
1907	163,120	165	262
1908	154,436	192	243
1909	228,804	200	265
1910	213,325	405	297
1911	261,946	347	293
1912	254,588	216	292
1913	268,261	238	285

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IRON MINES.

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IRON MINES.

Ohio is unimportant as a producer of iron ore, having shown a rapid decline since the year 1887, when a maximum production of 377,465 tons was reached, to the year ending Dec. 31, 1913, when but 4778 tons were mined in the State. No blackband ore has been mined since 1893. the entire product since that year having been hematite.

Two counties, Jackson and Lawrence, reported iron ore for 1913. Of the total product of 4778 tons, Jackson County produced 1799 tons, and Lawrence County reported 2979 tons.

The iron ore production of the State for certain years has been as follows:

Year.	*Total product in tons.*
1913	4,778
1912	2,485
1911	7,624
1910	9,719
1909	12,392
1908	2,120
1907	2,423
1906	8,515
1905	14,207
1900	52,266
1895	93,051
1890	169,088
1885	259,577

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GENERAL TABLES

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GENERAL TABLES.

TABLE I—COAL PRODUCTION IN OHIO FOR THE YEAR ENDING DECEMBER 31, 1913, CLASSIFIED AS PICK AND MACHINE MINED. BY COUNTIES.

County.	Tons.			Per Cent.	
	Pick Mined.	Machine Mined.	Total.	Pick Mined.	Machine Mined.
Athens	128,895	5,110,736	5,239,631	2.5	97.5
Belmont	158,841	10,295,954	10,454,795	1.5	98.5
Carroll	86,437	283,000	369,437	23.4	76.6
Columbiana	198,016	367,238	565,254	35.0	65.0
Coshocton	291,989	78,904	370,893	78.7	21.3
Gallia	20,561	.....	20,561	100.0	.....
Guernsey	32,577	4,292,105	4,324,682	.8	99.2
Harrison	47,163	705,437	752,600	6.3	93.7
Hocking	151,545	1,435,618	1,587,163	9.6	90.4
Holmes	9,998	.....	9,998	100.0	.....
Jackson	305,794	290,703	596,497	42.9	57.1
Jefferson	233,045	4,861,979	5,095,024	4.6	95.4
Lawrence	195,389	.....	195,389	100.0	.....
Mahoning	27,457	.....	27,457	100.0	.....
Medina	9,990	.....	9,990	100.0	.....
Meigs	37,593	621,426	659,019	5.7	94.3
Morgan	.....	281,445	281,445	100.0	100.0
Muskingum	225,354	270,241	495,595	45.5	54.5
Noble	13,451	771,104	784,555	1.7	98.3
Perry	217,285	2,000,531	2,217,816	9.8	90.2
Portage	35,096	49,193	84,289	41.6	58.4
Scioto	5,867	.....	5,867	100.0	.....
Stark	372,951	80,821	453,772	82.2	17.8
Summit	51,804	30,527	82,331	62.9	37.1
Trumbull	2,185	.....	2,185	100.0	.....
Tuscarawas	756,562	630,464	1,387,026	54.5	45.5
Vinton	29,061	88,946	118,007	24.6	75.4
Washington	615	.....	615	100.0	.....
Wayne	46,402	47,173	93,575	49.6	50.4
State	3,691,923	32,593,545	36,285,468	10.2	89.8

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TABLE 2—COAL PRODUCTION IN OHIO. 1913 COMPARED WITH 1912. BY COUNTIES.

County.	Tons Produced.		Gain.		Loss.	
	1912	1913	Tons.	Per Cent.	Tons.	Per Cent.
Athens	4,886,476	5,239,631	353,155	7.2	.....	.....
Belmont	9,316,850	10,454,795	1,137,945	12.2	.....	.....
Carroll	310,018	369,437	59,419	19.2	.....	.....
Columbiana	482,878	565,254	82,376	16.2	.....	.....
Coshocton	356,299	370,893	14,594	4.1	.....	.....
Gallia	27,523	20,561	.....	.....	6,962	25.3
Guernsey	4,333,963	4,324,682	.....	.....	9,281	.2
Harrison	750,831	752,600	1,769	.2	.....	.....
Hocking	2,046,175	1,587,163	.....	.....	459,012	22.4
Holmes	11,059	9,998	.....	.....	1,061	9.6
Jackson	783,334	596,497	.....	.....	186,837	23.9
Jefferson	4,641,908	5,095,024	453,116	9.8	.....	.....
Lawrence	88,108	195,389	107,285	121.8	.....	.....
Mahoning	47,511	27,457	.....	.....	20,054	42.2
Medina	10,395	9,990	.....	.....	405	3.9
Meigs	635,940	659,019	23,079	3.6	.....	.....
Monroe	180	.....	.....	.....	180	100.0
Morgan	196,622	281,445	84,823	43.1	.....	.....
Muskingum	522,198	495,595	.....	.....	26,603	5.1
Noble	641,677	784,555	142,878	22.3	.....	.....
Perry	2,164,130	2,217,816	53,686	2.5	.....	.....
Portage	83,293	84,289	996	1.2	.....	.....
Scioto	7,794	5,867	.....	.....	1,927	24.7
Stark	417,823	453,772	35,949	8.6	.....	.....
Summit	82,032	82,331	299	.4	.....	.....
Trumbull	2,989	2,185	.....	.....	804	26.9
Tuscarawas	1,311,301	1,387,026	75,725	5.8	.....	.....
Vinton	100,084	118,007	17,923	17.9	.....	.....
Washington	523	615	92	17.6	.....	.....
Wayne	184,381	93,575	.....	.....	90,806	49.2
State	34,444,291	36,285,468	.....	.....	.....	.....
Total net gain for the state:						
Tons	.....	.....	1,841,177	.....	.....	.....
Per cent.	.....	.....	.....	5.3	.....	.....

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TABLE 3—ANNUAL COAL PRODUCTION IN OHIO, CLASSIFIED AS PICK MINED AND MACHINE MINED. 1872 TO 1913 INCLUSIVE.

Year.	Pick Mined. (a)	Machine Mined. (a)	Total. (a)	Per Cent. of Total Production.	
				Pick Mined. (a)	Machine Mined. (a)
1872	.....	.....	5,315,294	.....	.....
1873	.....	.....	4,550,028	.....	.....
1874	.....	.....	3,267,585	.....	.....
1875	.....	.....	4,864,259	.....	.....
1876	.....	.....	3,500,000	.....	.....
1877	.....	.....	5,250,000	.....	.....
1878	.....	.....	5,500,000	.....	.....
1879	.....	.....	6,000,000	.....	.....
1880	.....	.....	7,000,000	.....	.....
1881	.....	.....	8,225,000	.....	.....
1882	.....	.....	9,450,000	.....	.....
1883	.....	.....	8,229,429	.....	.....
1884	.....	.....	7,650,062	.....	.....
1885	.....	.....	7,816,179	.....	.....
1886	.....	.....	8,435,211	.....	.....
1887	.....	.....	10,301,708	.....	.....
1888	.....	.....	10,910,946	.....	.....
1889	10,007,385	90,000	10,907,385	91.7	8.3
1890	10,640,360	1,148,499	11,788,859	90.3	9.7
1891	11,396,106	1,654,081	13,050,187	87.3	12.7
1892	12,360,828	2,239,080	14,599,908	84.7	15.3
1893	12,275,023	2,553,074	14,828,097	82.8	17.2
1894	9,354,753	2,555,466	11,910,219	78.5	21.5
1895	10,563,423	3,120,456	13,683,879	77.2	22.8
1896	9,544,259	3,368,349	12,912,608	73.9	26.1
1897	8,342,698	4,106,124	12,448,822	67.0	33.0
1898	8,805,557	5,252,598	14,058,155	62.6	37.4
1899	9,167,874	6,741,060	15,908,934	57.6	42.4
1900	9,966,872	9,457,777	19,426,649	51.3	48.7
1901	9,831,476	10,489,814	20,321,290	48.4	51.6
1902	10,489,619	13,439,648	23,929,267	43.8	56.2
1903	10,012,335	14,560,931	24,573,266	40.7	59.3
1904	8,037,360	16,546,455	24,583,815	32.7	67.3
1905	6,825,125	19,009,532	25,834,657	26.4	73.6
1906	6,500,263	20,713,232	27,213,495	23.9	76.1
1907	6,511,773	25,854,176	32,365,949	20.1	79.9
1908	4,676,869	21,610,931	26,287,800	17.8	82.2
1909	4,608,402	23,146,630	27,755,032	16.6	83.4
1910	4,341,483	30,083,468	34,424,951	12.6	87.4
1911	3,467,119	26,874,920	30,342,039	11.4	88.6
1912	3,769,536	30,674,755	34,444,291	10.9	89.1
1913	3,691,923	32,593,545	36,285,468	10.2	89.8

(a) Coal was first reported to the Bureau of Mines as pick and machine mined in 1889. Prior to that date practically the entire product was pick mined.

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TABLE 4—COAL MINES IN OPERATION AND MINES IDLE IN OHIO DURING THE YEAR ENDING DECEMBER 31, 1913. BY COUNTIES.

County.	Number of Mines in Operation Employing 10 Men or More.	Number of Mines in Operation Employing Less Than 10 Men.	Total Number Mines in Operation.	Number of Mines, Ordinarily Employing 10 or More Men, Idle During the Year.
Athens	49	8	57	.....
Belmont	66	31	97	10
Carroll	11	11	22	1
Columbiana	17	16	33	.....
Coshocton	15	19	34	3
Gallia	1	23	24	.....
Guernsey	25	20	45	.....
Harrison	6	46	52	.....
Hocking	25	11	36	.....
Holmes	.....	11	11	.....
Jackson	39	43	72	.....
Jefferson	40	27	67	2
Lawrence	13	30	43	.....
Mahoning	4	11	15	1
Medina	1	2	3	.....
Meigs	26	13	39	.....
Morgan	2	.....	2	.....
Muskingum	12	30	42	.....
Noble	5	24	29	2
Perry	35	19	54	.....
Portage	2	1	3	.....
Scioto	1	.....	1	.....
Stark	22	31	53	.....
Summit	3	4	7	.....
Trumbull	.....	4	4	.....
Tuscarawas	39	29	68	1
Vinton	8	10	18	1
Washington	.....	2	2	.....
Wayne	8	3	11	.....
State	475	469	944	21

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TABLE 5 — PICK AND MACHINE MINES IN OPERATION IN OHIO, NUMBER OF EMPLOYES, AND COAL PRODUCED DURING THE YEAR ENDING DECEMBER 31, 1913. BY COUNTIES.

[The total number of mines in operation is less than the total of pick and machine mines, because of the fact that many mines operated both as pick and machine mines.]

County.	Pick Mines.			Machine Mines.			Total		
	Number of Mines in Operation.	Number of Employes.	Total production in Tons.	Number of Mines in Operation.	Number of Employes.	Total production in Tons.	Number of Mines in Operation.	Number of Employes.	Total production in Tons.
Athens	25	198	128,895	49	7,336	5,110,736	57	7,534	5,239,631
Belmont	46	253	158,841	65	11,130	10,295,954	97	11,383	10,454,795
Carroll	20	196	86,437	3	387	283,000	22	583	369,437
Columbiana	24	310	198,016	9	539	367,238	33	849	565,254
Coshocton	34	541	291,989	5	125	78,904	34	666	370,893
Gallia	24	100	20,561	.....	.....	.....	24	100	20,561
Guernsey	21	69	32,577	23	4,686	4,292,105	45	4,755	4,324,682
Harrison	48	136	47,163	5	705	705,437	52	841	752,600
Hocking	22	205	151,545	22	2,082	1,435,618	36	2,287	1,587,163
Holmes	11	35	9,998	.....	.....	.....	11	35	9,998
Jackson	62	1,027	305,794	9	863	290,703	72	1,890	596,497
Jefferson	46	402	233,045	30	5,840	4,861,979	67	6,242	5,095,024
Lawrence	43	497	195,389	.....	.....	.....	43	497	195,389
Mahoning	14	105	27,457	.....	.....	.....	15	105	27,457
Medina	3	23	9,990	.....	.....	.....	3	23	9,990
Meigs	28	134	37,593	12	1,150	621,426	39	1,284	659,019
Morgan	.....	.....	.....	2	458	281,445	2	458	281,445
Muskingum	36	334	225,354	5	405	270,241	42	739	495,595
Noble	24	80	13,451	4	756	771,104	29	836	784,555
Perry	29	294	217,285	28	3,101	2,000,531	54	3,395	2,217,816
Portage	3	83	35,096	2	126	49,193	3	209	84,289
Scioto	1	16	5,867	.....	.....	.....	1	16	5,867
Stark	51	812	372,951	5	197	80,821	53	1,009	453,772
Summit	7	129	51,804	1	76	30,527	7	205	82,331
Trumbull	4	9	2,185	.....	.....	.....	4	9	2,185
Tuscarawas	58	1,028	756,562	15	817	630,464	68	1,845	1,387,026
Vinton	12	108	29,061	6	220	88,946	18	328	118,007
Washington	2	4	615	.....	.....	.....	2	4	615
Wayne	11	175	46,402	4	118	47,173	11	293	93,575
State	709	7,303	3,691,923	304	41,117	32,593,545	944	48,420	36,285,468

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TABLE 6—MINING MACHINES IN USE IN OHIO, AND AVERAGE NUMBER OF TONS OF COAL CUT PER MACHINE AND PER DAY. 1913 COMPARED WITH 1912. BY COUNTIES.

County.	Number of Machines in Use.		Average Number of Tons Cut Per Machine Per Year.		Average Number of Tons Cut Per Machine Per Day.	
	1912	1913	1912	1913	1912	1913
Athens	200	213	23,777	23,994	128.5	129.7
Belmont	391	414	23,354	23,189	107.1	105.4
Carroll	20	21	12,365	13,476	69.1	58.8
Columbiana	26	22	9,531	16,692	75.0	74.9
Coshocton	14	12	4,678	6,575	32.3	31.6
Guernsey	141	141	30,492	30,440	151.7	137.7
Harrison	32	38	22,304	18,564	93.7	85.9
Hocking	68	72	27,726	19,939	140.0	111.4
Jackson	53	42	5,947	6,922	38.9	60.2
Jefferson	251	254	17,629	19,142	84.8	91.2
Lawrence	2	.....	931	.....	12.4	.....
Mahoning	3	.....	4,591	.....	42.9	.....
Meigs	56	64	10,254	9,710	55.4	49.3
Morgan	13	13	15,080	21,650	109.3	118.9
Muskingum	31	24	9,227	11,260	46.4	56.3
Noble	20	25	31,334	30,844	155.9	147.6
Perry	122	135	16,406	14,819	94.3	82.8
Portage	7	9	6,147	5,466	30.9	28.6
Stark	10	17	5,505	4,754	46.3	31.4
Summit	3	4	19,249	30,527	101.3	53.0
Tuscarawas	70	81	8,263	7,784	36.4	32.8
Vinton	8	10	8,946	8,895	87.7	64.5
Wayne	8	12	10,378	3,931	64.1	25.7
State	1,549	1,653	19,803	19,718	100.0	96.7

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TABLE 7—MINING MACHINES IN USE IN OHIO, CLASSIFIED BY KIND OF POWER. 1913 COMPARED WITH 1912. BY COUNTIES.

County.	Electric.		Compressed Air.		Total.	
	1912	1913	1912	1913	1912	1913
Athens	200	213	.....	.....	200	213
Belmont	384	438	7	6	391	444
Carroll	20	21	.....	.....	20	21
Columbiana	26	22	.....	.....	26	22
Coshocton	9	10	5	2	14	12
Guernsey	139	141	2	.....	141	141
Harrison	31	38	1	.....	32	38
Hocking	68	72	.....	.....	68	72
Jackson	53	42	.....	.....	53	42
Jefferson	246	254	5	.....	251	254
Lawrence	1	.....	1	.....	2	.....
Mahoning	3	.....	.....	.....	3	.....
Meigs	56	64	.....	.....	56	64
Morgan	13	13	.....	.....	13	13
Muskingum	31	24	.....	.....	31	24
Noble	20	25	.....	.....	20	25
Perry	122	135	.....	.....	122	135
Portage	7	9	.....	.....	7	9
Stark	8	12	2	5	10	17
Summit	3	4	.....	.....	3	4
Tuscarawas	35	45	35	36	70	81
Vinton	8	10	.....	.....	8	10
Wayne	8	12	.....	.....	8	12
State	1,491	1,604	58	49	1,549	1,653

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TABLE 8—MINING MACHINES IN USE IN OHIO, CLASSIFIED ACCORDING TO KIND OF POWER, AND AVERAGE NUMBER OF TONS OF COAL CUT PER MACHINE, PER YEAR AND PER DAY. 1904 TO 1913 INCLUSIVE.

Year.	Number of Mining Machines in Use.			Average Number of Tons Cut Per Year.	Average Number of Tons Cut Per Day.
	Electric	Compressed Air	Total		
1904	888	87	975	16,971	99.2
1905	1,001	145	1,146	16,588	95.9
1906	1,110	156	1,266	16,361	94.6
1907	1,272	124	1,396	18,520	89.9
1908	1,316	129	1,445	14,956	95.3
1909	1,267	128	1,395	16,593	97.0
1910	1,374	99	1,473	20,423	101.6
1911	1,457	85	1,542	17,429	100.2
1912	1,491	58	1,549	19,803	100.0
1913	1,604	49	1,653	19,718	96.7

TABLE 9—NUMBER OF HAULAGE MOTORS IN USE IN OHIO. 1913 COMPARED WITH 1912. BY COUNTIES.

County.	1912	1913
Athens	73	84
Belmont	154	170
Carroll	8	7
Columbiana	9	9
Coshocton	4	3
Guernsey	66	82
Harrison	6	10
Hocking	19	22
Jackson	14	17
Jefferson	72	87
Lawrence	.....	1
Mahoning	1	.....
Meigs	11	14
Morgan	3	8
Muskingum	9	8
Noble	7	8
Perry	44	49
Portage	2	3
Stark	2	4
Summit	1	1
Tuscarawas	15	21
Vinton	5	4
State	525	612

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TABLE 10—COAL MINES IN OPERATION IN OHIO DURING THE YEAR ENDING DECEMBER 31, 1913, CLASSIFIED BY KIND OF OPENING AND KIND OF VENTILATION. BY COUNTIES.

County.	Total Number of Mines in Operation.	Number of Mines Having Each Specified Kind of Opening.			Number of Mines Having each Specified Kind of Ventilation.				
		Drift.	Slope.	Shaft.	Fan	Furnace.	Fire Basket.	Exhaust Steam.	Natural.
Athens	57	29	10	18	49	2	1	.....	5
Belmont	97	80	12	5	61	20	2	1	13
Carroll	22	17	4	1	8	6	3	.....	5
Columbiana	33	25	6	2	17	4	1	.....	11
Coshocton	34	32	2	.....	3	15	5	1	10
Gallia	24	23	1	.....	1	.....	.....	.....	23
Guernsey	45	17	11	17	25	4	1	.....	15
Harrison	52	43	7	2	7	1	2	.....	42
Hocking	36	33	3	.....	16	3	3	1	13
Holmes	11	8	3	.....	.....	3	1	1	6
Jackson	72	46	6	20	31	24	2	.....	15
Jefferson	67	58	3	6	36	12	2	.....	17
Lawrence	43	43	.....	.....	2	16	.....	.....	25
Mahoning	15	3	8	4	.....	1	.....	1	13
Medina	3	1	2	.....	.....	1	.....	2	.....
Meigs	39	36	2	1	9	5	1	.....	24
Morgan	2	1	1	.....	2	.....	.....	.....	.....
Muskingum	42	30	12	.....	10	12	1	.....	19
Noble	29	22	2	5	5	2	.....	.....	22
Perry	54	40	10	4	25	4	3	.....	22
Portage	3	.....	.....	3	2	.....	.....	1	.....
Scioto	1	1	.....	.....	.....	.....	.....	.....	1
Stark	53	33	9	11	12	21	.....	4	16
Summit	7	1	5	1	1	.....	.....	1	5
Trumbull	4	.....	1	3	1	.....	.....	.....	3
Tuscarawas	68	63	5	.....	20	30	4	.....	14
Vinton	18	16	1	1	6	1	3	.....	8
Washington	2	2	.....	.....	.....	.....	.....	.....	2
Wayne	11	4	2	5	6	.....	.....	1	4
State	944	707	128	109	355	187	35	14	353

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TABLE 11—AVERAGE NUMBER OF EMPLOYES IN PICK AND MACHINE MINES IN OHIO. 1913 COMPARED WITH 1912. BY COUNTIES.

County.	Pick Mines.		Machine Mines.		Total		Gain in total employes.		Loss in total employes.	
	1912	1913	1912	1913	1912	1913	Number.	Per Cent.	Number.	Per Cent.
Athens	188	198	6,791	7,336	6,979	7,534	555	8.0	.....	.....
Belmont	283	253	10,171	11,130	10,454	11,383	929	8.9	.....	.....
Carroll	150	196	383	387	533	583	50	9.4	.....	.....
Columbiana	479	310	580	589	1,059	849	.....	.....	210	0.2
Coshocton	558	541	172	125	730	666	.....	.....	64	8.8
Gallia	96	100	.....	.....	96	100	4	4.2	.....	.....
Guernsey	72	69	5,025	4,686	5,097	4,755	.....	.....	342	6.7
Harrison	93	136	746	705	839	841	2	.2	.....	.....
Hocking	259	205	2,567	2,082	2,826	2,287	.....	.....	539	19.1
Holmes	46	35	.....	.....	46	35	.....	.....	11	(a)
Jackson	1,233	1,027	811	863	2,044	1,890	.....	.....	154	7.5
Jefferson	868	402	5,180	5,840	5,548	6,242	694	12.5	.....	.....
Lawrence	374	497	10	.....	384	497	113	29.4	.....	.....
Mahoning	133	105	54	.....	187	105	.....	.....	82	43.9
Medina	29	23	.....	.....	29	23	.....	.....	6	(a)
Meigs	186	134	1,033	1,150	1,219	1,284	65	5.3	.....	.....
Monroe	1	.....	.....	.....	1	.....	.....	.....	1	(a)
Morgan	4	.....	334	458	338	458	120	35.5	.....	.....
Muskingum	847	381	400	405	747	739	.....	.....	8	10.7
Noble	69	80	663	756	732	836	104	14.2	.....	.....
Perry	213	294	3,188	3,101	3,401	3,395	.....	.....	6	17.6
Portage	152	83	104	126	256	209	.....	.....	47	18.4
Scioto	24	16	.....	.....	24	16	.....	.....	8	(a)
Stark	810	812	106	197	916	1,009	93	10.2	.....	.....
Summit	56	129	99	76	155	205	50	32.3	.....	.....
Trumbull	15	9	.....	.....	15	9	.....	.....	6	(a)
Tuscarawas	1,120	1,028	704	817	1,824	1,845	21	11.5	.....	.....
Vinton	156	108	162	220	318	328	10	3.1	.....	.....
Washington	2	4	.....	.....	2	4	2	(a)	.....	.....
Wayne	325	175	110	113	435	293	.....	.....	142	32.6
State	7,841	7,303	39,393	41,117	47,234	48,420	.....	.....	.....	.....

(a) Not computed owing to small number of employes.

TABLE 12—AVERAGE NUMBER AND PER CENT OF EMPLOYES REPORTED ANNUALLY IN PICK AND MACHINE MINES OF OHIO. 1904 TO 1913 INCLUSIVE.

Year.	Average Number of Employes.			Per Cent of Total Employes.	
	In pick mines.	In machine mines.	Total.	In pick mines.	In machine mines.
1904	17,723	28,111	45,834	38.7	61.3
1905	14,138	30,055	44,193	32.0	68.0
1906	13,128	33,373	46,501	28.2	71.8
1907	12,927	34,949	47,876	27.0	73.0
1908	11,938	38,330	50,267	23.7	76.3
1909	10,334	36,685	47,019	22.0	78.0
1910	9,607	39,223	48,830	19.7	80.3
1911	7,744	40,663	48,407	16.0	84.0
1912	7,841	39,393	47,234	16.6	83.4
1913	7,303	41,117	48,420	15.1	84.9

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TABLE 13—AVERAGE NUMBER OF EMPLOYES IN PICK MINES IN OHIO, BY OCCUPATIONS. 1913 COMPARED WITH 1912. BY COUNTIES.

County.	Pick Miners.		Inside Day Hands.		Outside Day Hands.		Total.	
	1912	1913	1912	1913	1912	1913	1912	1913
Athens	150	156	22	27	16	15	188	198
Belmont	239	203	27	31	17	19	283	253
Carroll	115	137	22	42	13	17	150	196
Columbiana	363	227	64	45	52	38	479	310
Coshocton	411	401	93	93	54	47	558	541
Gallia	81	76	9	15	6	9	96	100
Guernsey	58	57	8	8	6	4	72	69
Harrison	80	103	9	21	4	12	93	136
Hocking	214	168	21	22	24	15	259	205
Holmes	35	28	3	3	8	4	46	35
Jackson	840	730	255	189	138	108	1,233	1,027
Jefferson	298	306	43	65	27	31	368	402
Lawrence	290	376	47	68	37	53	374	497
Mahoning	92	57	14	24	27	24	133	105
Medina	19	15	5	5	5	3	29	23
Meigs	152	104	18	13	16	17	186	134
Morgan	4	.....	.....	.....	.....	.....	4	.....
Muskingum	265	262	51	42	31	30	347	334
Noble	58	58	7	16	4	6	69	80
Perry	182	224	16	44	15	26	213	294
Portage	101	51	28	20	23	12	152	83
Scioto	14	8	6	5	4	3	24	16
Stark	561	591	141	125	108	96	810	812
Summit	39	95	10	18	7	16	56	129
Trumbull	12	7	1	.....	2	2	15	9
Tuscarawas	861	777	163	156	96	95	1,120	1,028
Vinton	119	83	21	11	16	14	156	108
Washington	2	4	.....	.....	.....	.....	2	4
Wayne	223	119	53	29	49	27	325	175
State	*a* 5,878	5,423	1,157	1,137	805	743	*a* 7,840	7,303

a One pick miner in Monroe county is omitted from this table.

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TABLE 14—AVERAGE NUMBER OF EMPLOYES IN MACHINE MINES IN OHIO, BY OCCUPATIONS. 1913 COMPARED WITH 1912. BY COUNTIES.

County.	Machine runners and helpers.		Drillers, shooters and loaders.		Inside day hands.		Outside day hands.		Total	
	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913
Athens	462	513	4,382	4,748	1,197	1,292	750	783	6,791	7,336
Belmont	903	1,024	6,733	7,156	1,674	1,917	861	1,033	10,171	11,130
Carroll	38	42	237	221	75	98	33	31	383	387
Columbiana	70	54	349	326	101	106	60	53	580	539
Coshocton	28	20	86	59	38	32	20	14	172	125
Guernsey	382	369	3,126	2,862	1,180	1,102	337	353	5,025	4,686
Harrison	69	80	489	418	124	126	64	81	746	705
Hocking	167	155	1,688	1,319	412	350	300	258	2,567	2,082
Jackson	78	80	441	513	206	183	86	87	811	863
Jefferson	556	613	3,326	3,750	741	766	558	711	5,180	5,840
Lawrence	2	.....	6	.....	2	.....	.....	.....	10	.....
Mahoning	6	.....	35	.....	5	.....	8	.....	54	.....
Meigs	106	128	629	665	187	244	111	118	1,033	1,151
Morgan	34	36	205	330	56	57	39	35	334	458
Muskingum	57	56	237	256	62	57	44	36	400	405
Noble	58	70	397	445	154	187	54	54	663	756
Perry	269	283	2,081	1,944	516	510	322	364	3,188	3,101
Portage	10	12	57	67	23	29	14	18	104	126
Stark	17	29	65	116	12	26	12	26	106	197
Summit	6	10	60	43	17	13	16	10	99	76
Tuscarawas	116	139	402	452	110	137	76	89	704	817
Vinton	20	20	98	132	26	42	18	26	162	220
Wayne	17	17	55	51	20	26	18	24	110	118
State	3,470	3,750	25,181	25,873	6,938	7,295	3,801	4,199	39,398	41,117

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TABLE 15 — AVERAGE NUMBER OF DAYS PICK AND MACHINE MINES OF OHIO WERE IN OPERATION DURING THE YEAR ENDING DECEMBER 31, 1913. BY COUNTIES.

[A pick mine is regarded as in operation when miners are at work. A machine mine is regarded as in operation when coal is being loaded. Part-time days are computed to a full-time basis. The general average of days in operation for pick and machine mines is weighted according to the number of employes in the two classes of mines for each county and for the state.]

County.	Average Number of Days Pick Mines Were in Operation.	Average Number of Days Machine Mines Were in Operation.
Athens	163	187
Belmont	210	224
Carroll	226	231
Columbiana	256	218
Coshocton	211	214
Gallia	100	.....
Guernsey	193	221
Harrison	204	220
Hocking	207	184
Holmes	190	.....
Jackson	115	116
Jefferson	197	222
Lawrence	198	.....
Mahoning	186	.....
Medina	215	.....
Meigs	124	191
Morgan	.....	183
Muskingum	225	208
Noble	116	211
Perry	205	178
Portage	183	191
Scioto	270	.....
Stark	196	145
Summit	186	144
Trumbull	199	.....
Tuscarawas	221	225
Vinton	134	142
Washington	113	.....
Wayne	143	137
State	189	206

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TABLE 16—AVERAGE NUMBER OF DAYS WORKED IN COAL MINES OF OHIO, BY EMPLOYES IN CERTAIN SPECIFIED OCCUPATIONS. 1913 COMPARED WITH 1912. BY COUNTIES.

County.	Pick Miners.		Machine Runners and Helpers.		Drillers, Shooters and Loaders.	
	1912	1913	1912	1913	1912	1913
Athens	159	163	185	185	184	187
Belmont	208	210	218	220	215	224
Carroll	189	226	179	229	190	231
Columbiana	199	256	127	223	137	218
Coshocton	184	211	145	208	145	214
Gallia	118	100	.....	.....	.....	.....
Guernsey	206	193	201	221	202	221
Harrison	189	204	238	216	243	220
Hocking	180	207	198	179	201	184
Holmes	164	190	.....	.....	.....	.....
Jackson	153	115	153	115	151	116
Jefferson	213	197	208	210	215	222
Lawrence	115	198	75	.....	75	.....
Mahoning	157	186	107	.....	107	.....
Medina	208	215	.....	.....	.....	.....
Meigs	134	124	185	197	184	191
Morgan	70	.....	138	182	136	183
Muskingum	193	225	199	200	199	208
Noble	122	116	201	209	206	211
Perry	200	205	174	179	175	178
Portage	145	183	199	191	199	191
Scioto	180	270	.....	.....	.....	.....
Stark	175	196	119	151	119	145
Summit	186	186	190	144	190	144
Trumbull	111	199	.....	.....	.....	.....
Tuscarawas	202	221	227	237	221	225
Vinton	112	134	102	138	148	142
Washington	130	113	.....	.....	.....	.....
Wayne	114	143	162	153	169	137
State	173	189	198	204	199	206

TABLE 17—AVERAGE NUMBER OF DAYS WORKED IN COAL MINES OF OHIO, BY EMPLOYES IN CERTAIN SPECIFIED OCCUPATIONS, 1904 TO 1913 INCLUSIVE.

Year.	Pick Miners.	Machine Runners and Helpers.	Drillers Shooters, and Loaders.
1904	159	171	169
1905	169	173	169
1906	176	173	173
1907	191	206	201
1908	160	157	157
1909	182	171	172
1910	168	201	209
1911	168	174	175
1912	173	198	199
1913	189	204	206

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TABLE 18—AVERAGE NUMBER OF TONS OF COAL PRODUCED IN OHIO PER EMPLOYE IN PICK AND MACHINE MINES PER YEAR AND PER DAY, FOR THE YEAR ENDING DECEMBER 31, 1913. BY COUNTIES.

County.	Pick Mines.		Machine Mines.	
	Average Number of Tons per Employe per Year.	Average Number of Tons per Employe per Day.	Average Number of Tons per Employe per Year.	Average Number of Tons per Employe per Day.
Athens	651	3.9	697	3.7
Belmont	628	3.0	925	4.1
Carroll	441	1.9	731	3.2
Columbiana	639	2.5	681	3.1
Coshocton	540	2.5	631	2.9
Gallia	206	2.0	.....	.....
Guernsey	472	2.4	916	4.1
Harrison	347	1.7	1,001	4.6
Hocking	739	3.6	690	3.8
Holmes	286	1.5	.....	.....
Jackson	298	2.6	337	2.9
Jefferson	580	2.9	833	3.8
Lawrence	393	2.0	.....	.....
Mahoning	261	1.4	.....	.....
Medina	434	2.0	.....	.....
Meigs	281	2.2	540	2.8
Morgan	.....	.....	615	3.4
Muskingum	675	3.0	667	3.2
Noble	168	1.4	1,020	4.8
Perry	739	3.6	645	3.6
Portage	423	2.3	390	2.0
Scioto	367	1.4	.....	.....
Stark	459	2.3	410	2.8
Summit	402	2.2	401	2.7
Trumbull	243	1.2	.....	.....
Tuscarawas	736	3.3	772	3.4
Vinton	269	2.0	404	2.9
Washington	154	1.4	.....	.....
Wayne	265	1.9	400	3.0
State	506	2.7	793	3.8

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TABLE 19—AVERAGE NUMBER OF TONS OF COAL PRODUCED IN OHIO PER EMPLOYE, PER YEAR AND PER DAY, FOR CERTAIN SPECIFIED OCCUPATIONS. 1913 COMPARED WITH 1912. BY COUNTIES.

County.	Pick Miners.				Machine Runners and Helpers.				Drillers, Shooters and Loaders.			
	Average Number of tons mined per Year.		Average Number of tons mined per Day.		Average Number of tons cut per Year.		Average Number of tons cut per Day.		Average Number of tons loaded per Year.		Average Number of tons loaded per Day.	
	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913
Athens	874	826	5.5	5.1	10,293	9,963	55.6	53.9	1,085	1,076	5.9	5.7
Belmont	776	782	3.7	3.7	10,112	10,055	46.4	45.7	1,356	1,439	6.3	6.4
Carroll	545	631	2.9	2.8	6,508	6,738	36.4	29.4	1,043	1,281	5.5	5.5
Columbiana	648	872	3.3	3.4	3,540	6,801	27.9	30.5	710	1,126	5.2	5.2
Coshocton	708	728	3.8	3.5	2,339	3,945	16.1	18.9	762	1,337	5.3	6.2
Gallia	340	271	2.9	2.7	.....	.....	.....	.....	.....	.....	.....	.....
Guernsey	597	572	2.9	2.9	11,255	11,632	56.0	52.6	1,375	1,500	6.8	6.8
Harrison	464	458	2.5	2.2	10,344	8,818	43.5	40.8	1,460	1,687	6.0	7.7
Hocking	752	902	4.2	4.4	11,289	9,262	57.0	51.7	1,117	1,088	5.6	5.9
Holmes	316	357	1.9	1.9	.....	.....	.....	.....	.....	.....	.....	.....
Jackson	557	419	3.6	3.6	4,041	3,634	26.4	31.6	715	567	4.7	4.9
Jefferson	728	762	3.4	3.9	7,973	7,931	38.3	37.8	1,330	1,297	6.2	5.8
Lawrence	298	520	2.6	2.6	930	.....	12.4	.....	310	.....	4.1	.....
Mahoning	367	482	2.3	2.6	2,295	.....	21.4	.....	393	.....	3.7	.....
Medina	547	666	2.6	3.1	.....	.....	.....	.....	.....	.....	.....	.....
Meigs	406	361	3.0	2.9	5,417	4,855	29.3	24.6	913	934	5.0	4.9
Morgan	146	.....	2.1	.....	5,766	7,818	41.8	43.0	956	853	7.0	4.7
Muskingum	913	860	4.7	3.8	5,018	4,826	25.2	24.2	1,207	1,055	6.1	5.1
Noble	259	232	2.1	2.0	10,805	11,016	53.8	52.7	1,579	1,733	7.7	8.2
Perry	893	970	4.5	4.7	7,441	7,069	42.8	39.5	962	1,029	5.5	5.8
Portage	399	688	2.7	3.8	4,303	4,099	21.6	21.4	755	734	3.8	3.8
Scioto	557	733	3.1	2.7	.....	.....	.....	.....	.....	.....	.....	.....

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Stark	647	631	3.7	3.2	3,238	2,787	27.2	18.5	847	697	7.1	4.8
Summit	623	545	3.3	2.9	9,625	3,053	50.7	21.2	962	710	5.1	4.9
Trumbull	249	312	2.2	1.6	.....	.....	.....	.....	.....	.....	.....	.....
Tuscarawas	851	974	4.2	4.4	4,986	4,536	22.0	19.1	1,439	1,395	6.5	6.2
Vinton	240	350	2.1	2.6	3,578	4,447	35.1	32.2	730	674	4.9	4.7
Washington	262	154	2.0	1.4	.....	.....	.....	.....	.....	.....	.....	.....
Wayne	455	390	4.0	2.7	4,884	2,775	30.1	18.1	1,509	925	8.9	6.7
State	641	681	3.7	3.6	8,840	8,690	44.6	42.6	1,218	1,260	6.1	6.1

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TABLE 20—AVERAGE NUMBER OF TONS OF COAL PRODUCED ANNUALLY IN OHIO, PER EACH EMPLOYE, PER YEAR AND PER DAY, FOR CERTAIN SPECIFIED OCCUPATIONS, 1895 TO 1913 INCLUSIVE.

Year.	Pick Miners.		Machine Runners and Helpers.		Drillers, Shooters and Loaders.	
	Average Number of Tons mined per Year.	Average Number of Tons mined per Day.	Average Number of Tons cut per Year.	Average Number of Tons cut per Day.	Average Number of Tons loaded per Year.	Average Number of Tons loaded per Day.
1895	568	3.4	6,981	44.7	925	5.9
1896	431	2.9	5,817	40.4	775	5.4
1897	509	3.4	5,610	41.6	821	6.1
1898	546	3.6	6,524	38.2	892	5.2
1899	443	2.9	8,016	43.6	1,070	6.3
1900	411	2.4	8,467	47.4	1,128	6.3
1901	395	2.2	6,247	34.3	1,155	6.4
1902	380	2.2	9,478	49.9	1,212	6.4
1903	640	3.6	7,471	39.3	1,027	5.4
1904	602	3.8	7,204	42.0	684	4.0
1905	653	3.9	7,255	41.8	686	4.0
1906	661	3.8	7,155	41.4	991	5.7
1907	676	3.5	8,725	42.4	1,187	5.8
1908	518	3.2	6,823	43.5	869	5.5
1909	595	3.3	7,327	42.8	972	5.7
1910	602	3.6	9,136	45.5	1,195	5.7
1911	597	3.6	7,904	45.4	1,015	5.8
1912	641	3.7	8,840	44.6	1,218	6.1
1913	681	3.6	8,690	42.6	1,260	6.1

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TABLE 21—SUMMARY—AVERAGE NUMBER OF EMPLOYES IN PICK AND MACHINE MINES OF OHIO, AND AVERAGE NUMBER OF DAYS WORKED AND AVERAGE NUMBER OF TONS OF COAL PRODUCED PER EMPLOYE, FOR CERTAIN SPECIFIED OCCUPATIONS, FOR THE YEAR ENDING DECEMBER 31, 1913. BY COUNTIES.

County.	Pick Mining.				Machine Mining.							
	Number of pick miners employed.	Average number of days worked by pick miners.	Average number of tons of coal mined per pick miner.		Number employed.		Average number of days worked by		Average number of tons cut per machine runner and helper.		Average number of tons loaded per driller, shooter and loader.	
			Per year.	Per day.	Machine runners and helpers.	Drillers, shooters and loaders.	Machine runners and helpers.	Drillers, shooters and loaders.	Per year.	Per day.	Per year.	Per day.
Athens	156	163	826	5.1	513	4,748	185	187	9,963	53.9	1,076	5.7
Belmont	208	210	782	3.7	1,024	7,156	220	224	10,055	45.7	1,439	6.4
Carroll	137	226	631	2.8	42	221	229	231	6,738	29.4	1,281	5.5
Columbiana	227	256	872	3.4	54	826	223	218	6,801	30.5	1,126	5.2
Coshocton	401	211	728	3.5	20	59	208	214	3,945	18.9	1,337	6.2
Gallia	76	100	271	2.7								
Guernsey	57	198	572	2.9	369	2,862	221	221	11,632	52.6	1,500	6.8
Harrison	108	204	458	2.2	80	418	216	220	8,818	40.8	1,687	7.7
Hocking	168	207	902	4.4	156	1,819	179	184	9,262	51.7	1,068	5.9
Holmes	28	190	357	1.9								
Jackson	780	115	419	3.6	80	513	115	116	3,634	31.6	567	4.9
Jefferson	306	197	762	3.9	618	3,750	210	222	7,961	37.8	1,297	5.8
Lawrence	376	198	520	2.6								
Mahoning	57	186	482	2.6								
Medina	15	215	666	3.1								
Meigs	104	124	361	2.9	128	665	197	191	4,855	24.6	984	4.9
Morgan					36	330	182	188	7,818	43.0	853	4.7
Muskingum	262	225	860	3.8	56	256	200	208	4,826	24.2	1,055	5.1
Noble	58	116	232	2.0	70	445	209	211	11,016	52.7	1,733	8.2
Perry	224	205	970	4.7	283	1,941	179	178	7,069	39.5	1,029	5.8
Portage	51	188	688	3.8	12	67	191	191	4,099	21.4	734	3.8
Scioto	8	270	733	2.7								
Stark	591	196	631	3.2	29	116	151	145	2,787	18.5	697	4.8
Summit	95	186	545	2.9	10	43	144	144	3,053	21.2	710	4.9
Trumbull	7	199	312	1.6								
Tuscarawas	777	221	974	4.4	139	452	237	225	4,586	19.1	1,396	6.2
Vinton	83	184	350	2.6	20	132	138	142	4,447	32.2	674	4.7
Washington	4	118	154	1.4								
Wayne	119	143	390	2.7	17	5	153	137	2,775	18.1	925	6.7
State	5,423	189	681	3.6	3,750	25,878	204	206	8,690	42.6	1,260	6.1

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TABLE 22—SUMMARY OF ACCIDENTS REPORTED IN COAL MINES OF OHIO, FOR THE YEAR ENDING DECEMBER 31, 1913. BY COUNTIES.

County.	Number of Accidents Resulting in			Total.
	Death.	Disability of more than three weeks. (a)	Disability of three weeks or less. (b)	
Athens	13	77	66	156
Belmont	58	125	85	268
Carroll	2	1	3	6
Columbiana	2	16	5	23
Coshocton	3	4	1	8
Gallia	.....	.....	1	1
Guernsey	10	46	32	88
Harrison	.....	2	.....	2
Hocking	4	14	13	31
Jackson	2	17	7	26
Jefferson	25	94	34	153
Lawrence	1	6	2	9
Mahoning	.....	1	.....	1
Meigs	5	10	7	22
Muskingum	.....	9	1	10
Noble	18	34	24	76
Perry	10	39	23	72
Portage	.....	2	3	5
Scioto	.....	3	2	5
Stark	2	7	4	13
Tuscarawas	2	12	23	37
Vinton	2	4	1	7
Washington	1	.....	.....	1
Wayne	2	7	5	14
State	162	530	342	1034

(a) Accidents of this class were described as "serious accidents" in former reports of the Bureau of Mines.

(b) Accidents of this class were described as "minor accidents" in former reports of the Bureau of Mines.

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TABLE 23—NUMBER AND PER CENT OF ACCIDENTS REPORTED IN COAL MINES OF OHIO, CLASSIFIED BY DEGREE OF DISABILITY AND ASCRIBED TO CERTAIN SPECIFIED CAUSES, FOR YEAR ENDING DECEMBER 31, 1913.

Cause.	Number of Accidents Ascribed to each Specified Cause.				Per cent of Accidents Ascribed to each Specified Cause.			
	Fatal	Producing a Disability of more than three Weeks.	Producing a Disability of three Weeks or Less.	Total.	Fatal	Producing a Disability of more than three Weeks.	Producing a Disability of three Weeks or Less.	Total.
Falls of Roof	89	200	80	369	54.9	37.7	23.4	35.7
Falls of Coal	2	44	41	87	1.2	8.3	12.0	8.4
Mine Cars	28	146	103	277	17.3	27.5	30.1	26.8
Mining Machines	2	30	21	53	1.2	5.7	6.2	5.1
Motors	4	18	8	30	2.5	3.4	2.3	2.9
Electricity	9	1	5	15	5.6	.2	1.5	1.5
Explosions, Powder	6	21	7	34	3.7	4.0	2.0	3.3
Explosions, Gas	15	4	2	21	9.3	.7	.6	2.0
Miscellaneous Causes	7	66	75	148	4.3	12.5	21.9	14.3
Total	162	530	342	1,034	100.0	100.0	100.0	100.0

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TABLE 24—SUMMARY OF ACCIDENTS OF ALL CLASSES REPORTED IN COAL MINES OF OHIO, ASCRIBED TO CERTAIN SPECIFIED CAUSES, FOR THE YEAR ENDING DECEMBER 31, 1913. BY COUNTIES.

County.	Number of Accidents Ascribed to									Total all Causes
	Falls of Roof.	Falls of Coal.	Mine Cars.	Mining Machines	Motors.	Electricity.	Explosions, Powder.	Explosions, Gas.	Miscellaneous Causes.	
Athens	46	19	42	12	5	.....	1	3	28	156
Belmont	107	17	74	13	13	10	5	.....	29	268
Carroll	2	.....	1	.....	.....	.....	.....	.....	3	6
Columbiana	10	3	8	1	.....	.....	.....	.....	1	23
Coshocton	3	2	1	.....	1	.....	1	.....	.....	8
Gallia	.....	.....	.....	.....	.....	.....	.....	.....	1	1
Guernsey	23	12	27	8	3	1	.....	.....	14	88
Harrison	1	.....	.....	.....	.....	.....	.....	.....	1	2
Hocking	4	3	9	3	2	.....	1	.....	9	31
Jackson	7	1	10	.....	.....	.....	2	1	5	26
Jefferson	71	7	33	5	2	1	17	.....	17	153
Lawrence	3	.....	1	.....	1	.....	2	.....	2	9
Mahoning	.....	.....	.....	.....	.....	.....	.....	.....	1	1
Meigs	4	1	10	2	.....	.....	.....	.....	5	22
Muskingum	2	3	3	.....	.....	.....	.....	.....	2	10
Noble	17	6	21	3	.....	1	1	17	10	76
Perry	33	6	18	3	2	1	1	.....	8	72
Portage	.....	2	1	.....	.....	.....	.....	.....	2	5
Scioto	4	.....	.....	.....	.....	.....	.....	.....	1	5
Stark	7	2	2	.....	.....	.....	1	.....	1	13
Tuscarawas	12	2	10	2	1	1	2	.....	7	37
Vinton	3	.....	4	.....	.....	.....	.....	.....	.....	7
Washington	1	.....	.....	.....	.....	.....	.....	.....	.....	1
Wayne	9	1	2	1	.....	.....	.....	.....	1	14
State	369	87	277	53	30	15	34	21	148	1,034

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TABLE 25—FATAL ACCIDENTS REPORTED IN COAL MINES OF OHIO, ASCRIBED TO CERTAIN SPECIFIED CAUSES, AND CLASSIFIED BY NATIONALITY OF VICTIM, FOR THE YEAR ENDING DECEMBER 31, 1913. BY COUNTIES.

County.	Number of Accidents Ascribed to—									Total All Causes.	Nationality of Victim.	
	Falls of Roof.	Falls of Coal.	Mine Cars.	Mining Machines.	Motors.	Electricity	Explo-sions. Powder.	Explo-sions. Gas.	Miscel-laneous Causes.		American.	Foreign.
Athens	11		1						1	13	11	2
Belmont	32		15	1	1	6			3	58	18	40
Carroll	2									2	1	1
Columbiana	1		1							2	1	1
Coshocton	1		1				1			3	3	
Guernsey	4	2	1		1	1			1	10	8	2
Hocking	3		1							4	3	1
Jackson	1		1							2	2	
Jefferson	15		4	1			4		1	25	7	18
Lawrence							1			1	1	
Meigs	3		1						1	5	5	
Noble	2					1		15		18	5	13
Perry	6		2		1	1				10	6	4
Stark	2									2	2	
Tuscarawas	1				1					2	1	1
Vinton	2									2	2	
Washington	1									1		1
Wayne	2									2	1	1
State	89	2	28	2	4	9	6	15	7	162	77	85

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TABLE 26—ACCIDENTS RESULTING IN A DISABILITY OF MORE THAN THREE WEEKS(a) REPORTED IN COAL MINES OF OHIO, ASCRIBED TO CERTAIN SPECIFIED CAUSES, FOR THE YEAR ENDING DECEMBER, 31, 1913. BY COUNTIES.

County.	Number of Accidents Ascribed to									Total all Causes.
	Falls of Roof.	Falls of Coal.	Mine Cars.	Mining Machines.	Motors.	Electricity.	Explosions, Powder.	Explosions, Gas.	Miscellaneous Causes.	
Athens	25	8	20	8	4	.....	1	2	9	77
Belmont	52	10	33	5	8	.....	3	.....	14	125
Carroll	.....	.....	1	.....	.....	.....	.....	.....	.....	1
Columbiana	6	2	6	1	.....	.....	.....	.....	1	16
Coshocton	1	2	.....	.....	1	.....	.....	.....	.....	4
Guernsey	16	5	12	6	2	.....	.....	.....	5	46
Harrison	1	.....	.....	.....	.....	.....	.....	.....	1	2
Hocking	1	.....	4	2	.....	.....	1	.....	6	14
Jackson	5	.....	7	.....	.....	.....	1	.....	4	17
Jefferson	43	6	20	2	2	1	12	.....	8	94
Lawrence	3	.....	.....	.....	1	.....	1	.....	1	6
Mahoning	.....	.....	.....	.....	.....	.....	.....	.....	1	1
Meigs	1	.....	5	1	.....	.....	.....	.....	3	10
Muskingum	2	2	3	.....	.....	.....	.....	.....	2	9
Noble	11	4	13	2	.....	.....	.....	2	2	34
Perry	17	4	12	1	.....	.....	1	.....	4	39
Portage	.....	1	1	.....	.....	.....	.....	.....	.....	2
Scioto	3	.....	.....	.....	.....	.....	.....	.....	.....	3
Stark	3	.....	2	.....	.....	.....	1	.....	1	7
Tuscarawas	4	.....	4	1	.....	.....	.....	.....	3	12
Vinton	1	.....	3	.....	.....	.....	.....	.....	.....	4
Wayne	5	.....	.....	1	.....	.....	.....	.....	1	7
State	200	44	146	30	18	1	21	4	66	530

(a) Accidents of this class were described as "serious accidents" in former reports of the Bureau of Mines.

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TABLE 27—ACCIDENTS RESULTING IN A DISABILITY OF THREE WEEKS OR LESS(a) REPORTED IN COAL MINES OF OHIO, ASCRIBED TO CERTAIN SPECIFIED CAUSES, FOR THE YEAR ENDING DECEMBER 31, 1913. BY COUNTIES.

County.	Number of Accidents Ascribed to									Total all Causes.
	Falls of Roof.	Falls of Coal.	Mine Cars.	Mining Machines.	Motors.	Electricity.	Explosions, Powder.	Explosions, Gas.	Miscellaneous Causes.	
Athens	10	11	21	4	1			1	18	66
Belmont	23	7	26	7	4	4	2		12	85
Carroll									3	3
Columbiana	3	1	1							5
Coshocton	1									1
Gallia									1	1
Guernsey	3	5	14	2					8	32
Hocking		3	4	1	2				3	13
Jackson	1	1	2				1	1	1	7
Jefferson	13	1	9	2			1		8	34
Lawrence			1						1	2
Meigs		1	4	1					1	7
Muskingum		1								1
Noble	4	2	8	1			1		8	24
Perry	10	2	4	2	1				4	23
Portage		1							2	3
Scioto	1								1	2
Stark	2	2								4
Tuscarawas	7	2	6	1		1	2		4	23
Vinton			1							1
Wayne	2	1	2							5
State	80	41	103	21	8	5	7	2	75	342

(a) Accidents of this class were described as "minor accidents" in former reports of the Bureau of Mines.

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TABLE 28—SUMMARY OF ACCIDENTS OF ALL CLASSES REPORTED IN COAL MINES OF OHIO, ASCRIBED TO CERTAIN SPECIFIED CAUSES, FOR EACH YEAR FROM 1905 TO 1913, INCLUSIVE.

Year.	Number of Accidents Ascribed to									Total all Causes.
	Falls of Roof.	Falls of Coal.	Mine Cars.	Mining Machines.	Motors.	Electricity.	Explosions, Powder.	Explosions. Gas.	Miscellaneous Causes.	
1905	277	58	197	21	10	7	18	3	66	657
1906	265	48	163	38	17	11	43	11	59	655
1907	340	64	208	39	16	11	36	10	91	815
1908	307	38	206	36	5	6	33	11	72	714
1909	348	53	198	39	23	2	20	16	109	808
1910	363	60	200	46	15	8	7	21	113	833
1911	301	58	168	35	11	3	22	7	83	688
1912	341	44	185	50	8	5	15	6	72	726
1913	369	87	277	58	30	15	34	21	148	1,034

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TABLE 29—PER CENT OF ACCIDENTS OF ALL CLASSES REPORTED IN COAL MINES OF OHIO, ASCRIBED TO CERTAIN SPECIFIED CAUSES, FOR EACH YEAR FROM 1905 TO 1913, INCLUSIVE.

Year.	Per Cent of Accidents Ascribed to									Total all Causes.
	Falls of Roof.	Falls of Coal.	Mine Cars.	Mining Machines.	Motors.	Electricity.	Explosions, Powder.	Explosions, Gas.	Miscellaneous Causes.	
1905	42.2	8.8	30.0	3.2	1.5	1.1	2.7	0.5	10.0	100.0
1906	40.5	7.3	24.9	5.8	2.6	1.7	6.5	1.7	9.0	100.0
1907	41.7	7.9	25.5	4.8	2.0	1.3	4.4	1.2	11.2	100.0
1908	43.4	5.4	29.1	5.1	0.7	0.8	3.8	1.6	10.1	100.0
1909	43.1	6.6	24.5	4.8	2.8	0.2	2.5	2.0	13.5	100.0
1910	43.6	7.2	24.0	5.5	1.8	1.0	0.8	2.5	13.6	100.0
1911	43.8	8.4	24.4	5.1	1.6	0.4	3.2	1.0	12.1	100.0
1912	47.0	6.1	25.5	6.9	1.1	0.7	2.0	0.8	9.9	100.0
1913	35.7	8.4	26.8	5.1	2.9	1.5	3.3	2.0	14.3	100.0

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TABLE 30—FATAL ACCIDENTS REPORTED IN COAL MINES OF OHIO, ASCRIBED TO CERTAIN SPECIFIED CAUSES, FOR EACH YEAR FROM 1905 TO 1913, INCLUSIVE.

Year.	Number of Accidents Ascribed to									Total all Causes.
	Falls of Roof.	Falls of Coal.	Mine Cars.	Mining Machines.	Motors.	Electricity.	Explosions, Powder.	Explosions, Gas.	Miscellaneous Causes.	
1905	71	8	13	4	3	6	4	1	4	114
1906	75	5	8	.....	4	10	7	3	15	127
1907	94	3	16	3	3	11	2	3	18	153
1908	70	2	16	1	3	5	3	2	10	112
1909	68	2	20	2	4	2	5	1	11	115
1910	97	7	19	2	3	7	1	16	9	161
1911	81	10	8	2	1	2	1	.....	4	109
1912	93	7	13	1	4	2	5	2	9	136
1913	89	2	28	2	4	9	6	15	7	162

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TABLE 31—PER CENT OF FATAL ACCIDENTS REPORTED IN COAL MINES OF OHIO, ASCRIBED TO CERTAIN SPECIFIED CAUSES, FOR EACH YEAR FROM 1905 TO 1913, INCLUSIVE.

Year.	Per Cent of Accidents Ascribed to									Total all Causes.
	Falls of Roof.	Falls of Coal.	Mine Cars.	Mining Machines.	Motors.	Electricity.	Explosions, Powder.	Explosions, Gas.	Miscellaneous Causes.	
1905	62.3	7.0	11.4	3.5	2.6	5.3	3.5	0.9	3.5	100.0
1906	59.1	3.9	6.3	.....	3.1	7.9	5.5	2.4	11.8	100.0
1907	61.4	2.0	10.5	2.0	2.0	7.2	1.3	2.0	11.8	100.0
1908	62.5	1.8	14.3	0.9	2.7	4.5	2.7	1.8	8.9	100.0
1909	59.1	1.7	17.4	1.7	3.5	1.7	4.3	0.9	9.6	100.0
1910	60.2	4.3	11.8	1.2	1.9	4.3	0.6	9.9	5.6	100.0
1911	74.3	9.2	7.3	1.8	0.9	1.8	0.9	.....	3.7	100.0
1912	68.4	5.1	9.6	0.7	2.9	1.5	3.7	1.5	6.6	100.0
1913	54.9	1.2	17.3	1.2	2.5	5.6	3.7	9.3	4.3	100.0

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TABLE 32—ACCIDENTS RESULTING IN A DISABILITY OF MORE THAN THREE WEEKS(a), REPORTED IN COAL MINES OF OHIO, ASCRIBED TO CERTAIN SPECIFIED CAUSES, FOR EACH YEAR FROM 1905 TO 1913, INCLUSIVE.

Year.	Number of Accidents Ascribed to									Total all Causes.
	Falls of Roof.	Falls of Coal.	Mine Cars.	Mining Machines.	Motors.	Electricity.	Explosions, Powder.	Explosions, Gas.	Miscellaneous Causes.	
1905	149	32	129	14	4	1	10	2	31	372
1906	143	30	106	27	8	1	33	7	29	384
1907	191	53	135	28	10	.....	27	4	45	493
1908	178	29	135	23	2	1	19	3	36	426
1909	200	40	121	24	13	.....	13	11	45	467
1910	208	33	116	35	10	1	5	1	62	471
1911	163	32	91	25	7	1	15	3	38	375
1912	185	26	103	35	3	1	9	4	29	395
1913	200	44	146	30	18	1	21	4	66	530

(a) Accidents of this class were described as "serious accidents" in former reports of the Bureau of Mines.

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TABLE 33—PER CENT OF ACCIDENTS RESULTING IN A DISABILITY OF MORE THAN THREE WEEKS(a), REPORTED IN COAL MINES OF OHIO, ASCRIBED TO CERTAIN SPECIFIED CAUSES, FOR EACH YEAR FROM 1905 TO 1913, INCLUSIVE.

Year.	Per Cent of Accidents Ascribed to									Total all Causes.
	Falls of Roof.	Falls of Coal.	Mine Cars.	Mining Machines.	Motors.	Electricity.	Explosions, Powder.	Explosions, Gas.	Miscellaneous Causes.	
1905	40.1	8.6	34.7	3.8	1.1	0.3	2.7	0.5	8.3	100.0
1906	37.2	7.8	27.6	7.0	2.1	0.3	8.6	1.8	7.6	100.0
1907	38.7	10.8	27.4	5.7	2.0	.....	5.5	0.8	9.1	100.0
1908	41.8	6.8	31.7	5.4	0.5	0.2	4.5	0.7	8.5	100.0
1909	42.8	8.6	25.9	5.1	2.8	.....	2.8	2.4	9.6	100.0
1910	44.2	7.0	24.6	7.4	2.1	0.2	1.1	0.2	13.2	100.0
1911	43.5	8.5	24.3	6.7	1.9	0.3	4.0	0.8	10.1	100.0
1912	46.8	6.6	26.1	8.9	0.8	0.3	2.3	1.0	7.3	100.0
1913	37.7	8.3	27.5	5.7	3.4	0.2	4.0	0.8	12.5	100.0

(a) Accidents of this class were described as "serious accidents" in former reports of the Bureau of Mines.

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TABLE 34—ACCIDENTS RESULTING IN A DISABILITY OF THREE WEEKS OR LESS(a), REPORTED IN COAL MINES OF OHIO, ASCRIBED TO CERTAIN SPECIFIED CAUSES, FOR EACH YEAR FROM 1905 TO 1913, INCLUSIVE.

Year.	Number of Accidents Ascribed to									Total all Causes.
	Falls of Roof.	Falls of Coal.	Mine Cars.	Mining Machines.	Motors.	Electricity.	Explosions, Powder.	Explosions, Gas.	Miscellaneous Causes.	
1905	57	18	55	3	3	.....	4	.....	31	171
1906	47	13	49	11	5	.....	3	1	15	144
1907	55	8	57	8	3	.....	7	3	28	169
1908	59	7	55	12	.....	.....	5	6	26	170
1909	80	11	57	13	6	.....	2	4	53	226
1910	58	20	65	9	2	.....	1	4	42	201
1911	57	16	69	8	3	.....	6	4	41	204
1912	63	11	69	14	1	2	1	.....	34	195
1913	80	41	103	21	8	5	7	2	75	342

(a) Accidents of this class were described as "minor accidents" in former reports of the Bureau of Mines.

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TABLE 35—PER CENT OF ACCIDENTS RESULTING IN A DISABILITY OF THREE WEEKS OR LESS(a), REPORTED IN COAL MINES OF OHIO, ASCRIBED TO CERTAIN SPECIFIED CAUSES, FOR EACH YEAR FROM 1905 TO 1913 INCLUSIVE.

Year.	Per Cent of Accidents Ascribed to									Total all Causes.
	Falls of Roof.	Falls of Coal.	Mine Cars.	Mining Machines.	Motors.	Electricity.	Explosions, Powder.	Explosions, Gas.	Miscellaneous Causes.	
1905	33.3	10.5	32.2	1.8	1.8	.....	2.3	.....	18.1	100.0
1906	32.6	9.0	34.0	7.6	3.5	.....	2.1	0.7	10.4	100.0
1907	32.5	4.7	33.7	4.7	1.8	.....	4.1	1.8	16.6	100.0
1908	34.7	4.1	32.4	7.1	.....	.....	2.9	3.5	15.3	100.0
1909	35.4	4.9	25.2	5.8	2.7	.....	0.9	1.8	23.5	100.0
1910	28.9	9.9	32.3	4.5	1.0	.....	0.5	2.0	20.9	100.0
1911	27.9	7.8	33.8	3.9	1.5	.....	2.9	2.0	20.1	100.0
1912	32.3	5.6	35.4	7.2	0.5	1.0	0.5	.....	17.4	100.0
1913	23.4	12.0	30.1	6.1	2.3	1.5	2.0	0.6	21.9	100.0

(a) Accidents of this class were described as "minor accidents" in former reports of the Bureau of Mines.

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TABLE 36—NUMBER OF MEN EMPLOYED AND TONS OF COAL MINED PER FATAL ACCIDENT AND PER ACCIDENT RESULTING IN A DISABILITY OF MORE THAN THREE WEEKS, (a) REPORTED IN COAL MINES OF OHIO, FOR THE YEAR ENDING DECEMBER 31, 1913. BY COUNTIES.

County.	Total Number of Men Employed.	Total Number of Tons Mined.	Fatal Accidents.			Accidents Resulting in a Disability of More Than Three Weeks. (a)		
			Number.	Number of Men Employed Per Life Lost.	Tons of Coal Mined Per Life Lost.	Number.	Number of Men Employed Per Accident.	Tons of Coal Mined Per Accident.
Athens	7,584	5,289,631	13	579	403,049	77	98	68,047
Belmont	11,383	10,454,795	58	196	180,255	125	91	83,638
Carroll	583	369,437	2	292	184,719	1	583	369,437
Columbiana	849	565,254	2	425	282,627	16	53	35,328
Coshocton	666	370,893	3	222	123,631	4	166	92,723
Gallia	100	20,561						
Guernsey	4,755	4,324,682	10	476	432,468	46	103	94,015
Harrison	841	752,600				2	421	376,300
Hocking	2,287	1,587,163	4	572	396,791	14	163	113,369
Holmes	85	9,998						
Jackson	1,890	596,497	2	945	298,248	17	111	35,088
Jefferson	6,242	5,095,024	25	249	203,801	94	66	54,202
Lawrence	497	195,389	1	497	195,389	6	82	32,565
Mahoning	105	27,457				1	105	27,457
Medina	23	9,990						
Meigs	1,284	659,019	5	256	131,804	10	128	65,902
Morgan	458	281,445						
Muskingum	789	495,595				9	82	55,066
Noble	836	784,555	18	46	43,586	34	25	23,075
Perry	3,395	2,217,816	10	340	221,782	39	87	56,867
Portage	209	84,289				2	104	42,145
Scioto	16	5,867				3	5	1,956
Stark	1,009	453,772	2	504	226,886	7	144	64,824
Summit	205	82,331						
Trumbull	9	2,185						
Tuscarawas	1,845	1,387,026	2	927	693,513	12	154	115,585
Vinton	328	118,007	2	164	59,004	4	82	29,502
Washington	4	615	1	4	615			
Wayne	293	93,575	2	147	46,788	7	42	13,368
State	48,420	36,285,468	162	299	223,984	530	91	68,463

(a) Accidents of this class were described as "serious accidents" in former reports of the Bureau of Mines.

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TABLE 37—NUMBER OF MEN EMPLOYED AND TONS OF COAL MINED PER FATAL ACCIDENT AND PER ACCIDENT RESULTING IN A DISABILITY OF MORE THAN THREE WEEKS, (a) REPORTED IN COAL MINES OF OHIO, FOR EACH YEAR FROM 1884 TO 1913 INCLUSIVE.

Year.	Total Number of Men Employed.	Tons Mined.	Fatal Accidents.			Accidents Resulting in a Disability of More Than Three Weeks. (a)		
			Number.	Number of Men Employed Per Life Lost.	Tons of Coal Mined Per Life Lost.	Number.	Number of Men Employed Per Accident.	Tons of Coal Mined Per Accident.
1884	20,101	7,650,062	26	773	294,233	40	503	191,252
1885	19,704	7,816,179	32	616	244,256	51	386	153,258
1886	20,437	8,435,211	43	475	196,168	62	330	136,052
1887	22,237	10,301,708	36	618	286,159	75	296	137,356
1888	21,801	10,910,946	29	752	376,240	78	280	139,884
1889	23,295	10,907,385	33	706	330,527	52	448	209,757
1890	22,192	11,788,859	42	528	280,687	52	427	226,709
1891	23,997	13,050,187	44	545	296,595	66	364	197,730
1892	26,972	14,599,908	42	642	347,617	98	290	156,988
1893	28,810	14,828,097	34	847	436,121	124	232	119,581
1894	31,493	11,910,219	45	700	264,672	116	271	102,674
1895	28,998	13,688,879	52	558	263,152	152	191	90,026
1896	28,446	12,912,608	41	694	314,942	159	179	81,211
1897	28,785	12,448,822	40	720	311,221	142	203	87,668
1898	28,365	14,058,155	55	516	255,603	155	183	90,697
1899	28,028	15,908,984	59	475	269,643	204	137	77,986
1900	31,702	19,426,649	68	466	285,686	207	153	93,849
1901	33,505	20,821,290	72	465	282,240	276	121	73,628
1902	37,421	23,929,267	81	462	295,423	296	126	80,300
1903	41,396	24,573,266	114	363	215,555	324	128	75,843
1904	45,334	24,583,815	118	388	208,337	316	145	77,797
1905	44,193	25,834,657	114	388	226,620	372	119	69,448
1906	46,501	27,213,495	127	366	214,279	384	121	70,868
1907	47,876	32,365,949	153	313	211,542	493	97	65,651
1908	50,267	26,287,800	112	449	234,712	426	118	61,706
1909	47,019	27,755,082	115	409	241,348	467	101	59,453
1910	48,880	34,424,961	161	303	213,820	471	104	73,089
1911	48,407	30,342,039	109	444	278,367	375	129	80,912
1912	47,284	34,444,291	136	347	253,267	395	120	87,201
1913	48,420	36,285,468	162	299	223,984	530	91	68,468

(a) Accidents of this class were described as "serious accidents" in former reports of the Bureau of Mines.

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TABLE 38—NUMBER OF EMPLOYES IN FIRE CLAY MINES OF OHIO, AVERAGE NUMBER OF DAYS WORKED, AND TONS OF FIRE CLAY PRODUCED. 1913 COMPARED WITH 1912. BY COUNTIES.

County.	Number of Employes.		Average Number of Days Mines Were in Operation.		Tons Produced.		Production for 1913 Compared With 1912.			
							Gain.		Loss.	
	1912	1913	1912	1913	1912	1913	Tons	Per Cent.	Tons	Per Cent.
Athens	83	79	205	282	158,986	164,765	5,779	3.6	.....	.....
Belmont	16	9	220	300	26,597	20,000	.....	.....	6,597	24.8
Carroll	68	153	294	307	133,737	274,064	140,327	104.9	.....	.....
Columbiana	130	98	240	250	189,911	189,879	.....	.....	32	(a)
Coshocton	13	.....	280	.....	13,161	.....	.....	.....	13,161	100.0
Guernsey	10	12	300	300	9,000	14,000	5,000	55.6	.....	.....
Hocking	68	88	279	292	179,432	176,448	.....	.....	2,984	1.7
Holmes	1	.....	150	.....	875	.....	.....	.....	875	100.0
Jackson	13	19	185	246	11,048	120,820	109,772	993.6	.....	.....
Jefferson	219	218	265	273	453,383	471,649	18,266	4.0	.....	.....
Lawrence	23	20	188	223	41,292	40,000	.....	.....	1,292	3.1
Mahoning	8	15	51	131	1,200	1,660	460	38.3	.....	.....
Muskingum	20	14	102	186	19,559	20,647	1,088	5.6	.....	.....
Perry	128	97	216	219	256,753	163,791	.....	.....	92,962	36.2
Scioto	129	69	234	236	189,997	55,738	.....	.....	134,259	70.7
Stark	135	109	258	275	166,631	188,872	22,241	13.3	.....	.....
Summit	42	29	302	300	157,739	117,638	.....	.....	40,101	25.4
Tuscarawas	182	178	271	259	344,209	394,990	50,781	14.8	.....	.....
Vinton	.....	20	.....	166	.....	27,160	27,160	100.0	.....	.....
General average for the state of number of employes and number of days mines were in operation and total product	1,288	1,227	248	264	2,858,510	2,488,121	.....	.....	.....	.....
Total net gain for the state:										
Tons	.....	.....	.....	.....	.....	.....	79,611	.....	.....	.....
Per cent	.....	.....	.....	.....	.....	.....	.....	3.4	.....	.....

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TABLE 39—ANNUAL FIRE CLAY PRODUCTION OF OHIO, FROM 1884 TO 1913 INCLUSIVE, AND ANNUAL GAIN OR LOSS COMPARED WITH PRECEDING YEAR.

Year.	Tons Produced.	Gain.		Loss.	
		Tons.	Per cent.	Tons.	Per cent.
1884	168,208	.....	.....	.....	.....
1885	153,756	.....	.....	14,452	8.5
1886	266,709	112,953	73.5	.....	.....
1887	366,476	99,767	37.4	.....	.....
1888	471,794	105,318	28.7	.....	.....
1889	574,129	102,335	21.7	.....	.....
1890	833,159	259,030	45.1	.....	.....
1891	1,087,560	254,401	30.5	.....	.....
1892	1,253,110	165,550	15.2	.....	.....
1893	1,032,348	.....	.....	220,762	17.6
1894	942,913	.....	.....	89,435	8.6
1895	844,832	.....	.....	98,081	10.4
1896	827,450	.....	.....	17,382	2.1
1897	822,727	.....	.....	4,723	0.6
1898	1,026,922	204,195	24.8	.....	.....
1899	1,173,697	146,775	14.3	.....	.....
1900	1,473,088	299,391	25.5	.....	.....
1901	1,337,181	.....	.....	135,907	9.2
1902	1,528,829	191,648	14.3	.....	.....
1903	1,567,603	38,774	2.5	.....	.....
1904	2,045,848	478,245	30.5	.....	.....
1905	2,039,292	.....	.....	6,556	(a)
1906	2,126,179	86,887	4.3	.....	.....
1907	2,177,174	50,995	2.4	.....	.....
1908	2,004,019	.....	.....	173,155	8.0
1909	2,289,088	285,069	14.2	.....	.....
1910	2,028,852	.....	.....	260,236	11.4
1911	2,309,188	280,336	13.8	.....	.....
1912	2,353,510	44,322	1.9	.....	.....
1913	2,433,121	79,611	3.4	.....	.....

(a) Less than one-tenth of one per cent.

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TABLE 40—LIMESTONE INDUSTRY OF OHIO—AVERAGE NUMBER OF EMPLOYES, AVERAGE NUMBER OF DAYS QUARRIES WERE OPERATED, AND CLASSIFIED PRODUCTS, FOR THE YEAR ENDING DECEMBER 31, 1913. BY COUNTIES.

County.	Average Number of Employes.	Average Number of Days Quarries Operated.	Production in 1913.							
			Burned for Lime. (Tons.)	Burned for Fluxing. (Tons.)	Dimension Stone. (Cu. Ft.)	Ordinary Building Stone. (Cu. Yds.)	For Piers and Protection Purposes. (Cu. Yds.)	Paving. (Sq. Ft.)	Ballast and Macadam. (Cu. Yds.)	For Cement and Concrete. (Cu. Yds.)
Allen	111	236	.....	.....	.....	.....	.....	.....	357,129	27,473
Butler	1	5	.....	.....	.....	.....	.....	.....	75	.....
Clark	136	244	36,474	37,048	1,516	15,085	.....	.....	22,195	.....
Clinton	13	130	.....	.....	.....	.....	.....	.....	11,130	.....
Crawford	35	230	5,000	.....	.....	.....	.....	.....	6,100	.....
Delaware	69	277	27,010	.....	.....	.....	.....	.....	2,882	.....
Erie	435	325	78,215	484,618	.....	22,018	.....	.....	700,000	27,167
Franklin	434	307	823,559	.....	.....	3,154	18,317	.....	337,368	.....
Greene	24	110	280	.....	.....	.....	.....	.....	4,041	.....
Hamilton	12	43	.....	.....	.....	300	.....	5,400	920	.....
Hancock	20	320	.....	.....	.....	.....	.....	.....	25,512	10,423
Hardin	77	297	20,000	.....	.....	.....	.....	.....	220,440	.....
Jackson	12	160	.....	7,700	.....	.....	.....	.....	.....	.....
Lawrence	85	237	62,461	6,000	.....	.....	.....	.....	.....	.....
Logan	16	180	.....	.....	.....	.....	.....	.....	75,000	.....
Lucas	179	240	.....	.....	.....	.....	34,096	.....	468,604	.....
Marion	414	307	102,465	.....	.....	22,820	.....	.....	157,055	.....
Miami	89	272	15,391	74,641	.....	51	2,240	.....	84,275	.....
Montgomery	8	30	.....	.....	.....	.....	.....	.....	600	.....
Ottawa	578	316	394,962	1,981,921	.....	.....	17,335	.....	19,204	69,605
Paulding	56	149	.....	.....	.....	.....	.....	.....	33,000	.....
Preble	49	226	.....	100	.....	.....	1,808	.....	111,600	8,444
Putnam	60	189	.....	.....	.....	.....	.....	.....	42,730	11,074
Ross	20	220	.....	.....	.....	.....	.....	.....	8,000	.....
Sandusky	137	267	37,949	.....	.....	4,725	45	.....	92,668	.....
Seneca	97	240	12,500	.....	.....	3,783	.....	.....	124,600	.....

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Stark	38	256	7,849	.....	.....	.....	.....	.....	88,939	.....
Van Wert...	72	300	100,000	.....	.....	.....	.....	.....	125,000	.....
Wood	190	223	21,561	.....	.....	.....	.....	.....	266,640	.....
Wyandot ...	12	60	.....	.....	.....	.....	.....	.....	5,000	.....
General average for the state of number of employes and number of days quarries were in operation and total classified product	3,479	278	1,745,676	2,592,028	1,516	71,936	73,841	5,400	3,390,707	154,186

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TABLE 41—LIMESTONE INDUSTRY OF OHIO—AVERAGE NUMBER OF EMPLOYES, AVERAGE NUMBER OF DAYS QUARRIES WERE OPERATED, AND CLASSIFIED PRODUCTS, FOR EACH YEAR FROM 1886 TO 1913 INCLUSIVE.

Year.	Average Number of Employes.	Average Number of Days Quarries Were Operated.	Production.									
			Burned for Lime.	Burned for Fluxing.	Dimension Stone.	Ordinary Building Stone.	For Piers and Protection Purposes.	Flagging.	Paving.	Curbing.	Ballast and Macadam.	For Cement and Concrete.
			Tons.	Tons.	Cubic Feet.	Cubic Yards.	Cubic Yards.	Square Feet.	Square Feet.	Linear Feet.	Cubic Yards.	Cubic Yards.
1886	2,883	149	517,270	328,080	566,697	295,231	68,050	187,900	154,686	60,650	186,810	.....
1887	2,767	182	619,027	478,674	950,393	385,247	78,932	350,954	289,195	139,174	416,018	.....
1888	3,025	165	602,074	666,481	1,795,038	.....	78,381	580,901	313,855	205,227	445,770	.....
1889	2,631	165	849,442	235,298	898,886	364,685	69,876	413,400	586,361	209,339	354,544	.....
1890	2,445	171	689,827	308,521	333,076	270,367	81,414	673,850	507,313	165,434	432,650	.....
1891	3,286	143	744,946	284,478	684,901	361,637	65,295	417,855	4,948,989	200,756	622,194	.....
1892	3,353	132	631,049	217,981	1,057,157	323,600	48,102	171,567	2,883,208	101,820	764,784	.....
1893	2,929	149	396,690	108,376	747,712	290,614	57,374	226,654	393,883	209,327	757,142	.....
1894	2,484	138	349,631	240,173	1,393,792	181,722	22,839	206,736	312,868	144,042	435,764	.....
1895	3,829	127	1,175,988	429,632	500,648	253,900	48,675	573,634	640,836	152,873	650,217	.....
1896	3,186	132	397,162	623,544	260,289	215,900	29,114	187,579	163,373	71,236	553,329	.....
1897	3,398	131	481,871	320,437	871,741	248,392	97,548	145,331	118,025	55,168	629,044	.....
1898	3,149	132	624,921	571,029	606,172	368,343	47,762	71,606	43,256	52,940	729,896	.....
1899	3,165	142	626,274	791,701	405,112	264,640	87,099	100,133	81,796	57,091	864,349	.....
1900	3,680	141	547,046	882,426	166,276	274,919	120,264	131,337	64,170	40,550	1,268,416	.....
1901	4,135	154	554,523	1,419,087	318,995	304,312	134,784	108,177	48,512	37,828	1,551,378	.....
1902	3,946	181	652,990	1,489,974	98,186	273,140	108,074	65,904	42,337	25,321	1,386,104	.....
1903	3,848	167	548,068	1,501,038	106,861	286,683	88,114	44,330	204,648	16,726	1,271,687	.....
1904	3,976	229	604,979	1,402,829	102,044	323,209	148,497	44,638	146,984	20,363	1,586,865	54,130
1905	4,728	245	740,203	2,143,001	937,702	300,368	77,286	46,398	36,403	14,769	2,987,166	237,102
1906	5,131	246	655,503	1,333,538	46,541	305,429	123,606	10,863	115,329	63,175	3,105,606	144,551
1907	5,420	248	814,726	2,718,820	92,331	160,468	96,850	15,069	31,121	223,382	2,884,820	401,775
1908	4,678	225	658,182	1,459,588	99,100	132,513	49,681	4,117	38,125	6,275	2,987,802	357,120
1909	4,705	235	924,244	1,071,855	115,608	123,634	13,520	9,643	.....	4,770	3,086,882	378,519
1910	4,361	287	733,307	2,406,963	71,377	92,821	21,410	200	16,400	1,733	3,819,698	178,056
1911	4,090	306	751,866	2,242,476	72,213	65,466	90,661	.....	90,200	7,850	3,164,742	516,085
1912	4,202	288	885,180	3,307,051	41,000	94,973	126,726	.....	18,000	250	3,544,584	188,848
1913	3,479	278	1,745,676	2,592,028	1,516	71,936	73,841	.....	5,400	.....	3,390,707	154,186

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TABLE 42—IRON ORE—ANNUAL PRODUCTION IN OHIO FROM 1884 TO 1913 INCLUSIVE.

Year.	Tons Produced.		
	Blackband.	Hematite.	Total.
1884	(a)	(a)	276,286
1885	70,931	188,646	259,577
1886	83,947	260,537	344,484
1887	87,965	289,500	377,465
1888	82,054	171,298	253,352
1889	70,398	182,011	252,409
1890	41,848	127,240	169,088
1891	15,540	52,444	67,984
1892	8,680	81,042	89,722
1893	3,837	64,423	68,260
1894	.....	58,043	58,043
1895	.....	93,051	93,051
1896	.....	70,765	70,765
1897	.....	50,267	50,267
1898	.....	51,659	51,659
1899	.....	25,359	25,359
1900	.....	52,266	52,266
1901	.....	41,325	41,325
1902	.....	10,681	10,681
1903	.....	12,995	12,995
1904	.....	20,652	20,652
1905	.....	14,207	14,207
1906	.....	8,515	8,515
1907	.....	2,423	2,423
1908	.....	2,120	2,120
1909	.....	12,392	12,392
1910	.....	9,719	9,719
1911	.....	7,624	7,624
1912	.....	2,485	2,485
1913	.....	4,778	4,778

(a) Separate data not available for the two kinds of ore for 1884.

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